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Informal Sector in India: Contribution, Growth and Efficiency

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Abstract

Over the years, informal sector contributed significantly and expanded rapidly in the Indian economy. Given its contribution to the economy, how efficiently the informal sector's firms perform is a key researchable issue. The first objective of this paper is to measure the economic significance of the unorganized sector in Indian economy by its share, growth and composition over a long period from 1970 through 2006; and in comparison with the organized sector at the aggregate and disaggregate (9 sub-sectors) levels under different foreign trade policy regimes and by using the annual data from National Accounts Statistics (1980 to 2008) on Net Domestic Product. Measurement of efficiency performance of the informal sector's firms is the second objective of this paper. Efficiency scores of informal sector are computed by states using Data Envelopment Analysis (DEA) technique. This estimation also tests the hypothesis whether or not the firms having contract with formal firms/agencies/contractors and possessing secured market of their output would be more efficient in terms of output oriented technical efficiency vis-à-vis the other firms. The result of best performing state (Delhi) and least performing state (Orissa) contrasts each other. In Delhi, empirical analysis supports that contracted firms are less efficient, while contracted firms are more efficient in Orissa. In this context, determinants of efficiency of the informal sector's firms are also estimated, using the unit level data from National Sample Survey on informal sector in India in 1999-2000. Policy implications of these empirical results are highlighted for strengthening of informal sector in India as well as in other developing countries.

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Informal Sector in India: Contribution, Growth and Efficiency

1. Introduction

There is an ongoing debate regarding the definition of informal/unorganized sector both at the national and international levels. In India, the first official definition of the unorganized sector was given by Central Statistical Organisation (CSO). According to CSO (1980), the unorganized sector refers to those operating units whose activity is not regulated under any statutory Act or legal provision and/or which do not maintain any regular accounts. Though the concept of unorganized sector is slightly different from the informal sector[1], but here we will use both the terms inter-changeably.

Over the years, informal sector contributed significantly and expanded rapidly in the Indian economy. High labour intensity of production is the main reason for huge employment generation in the informal sector. About 48 per cent of non-agricultural employment in North Africa, 51 per cent in Latin America, 65 per cent in Asia and 72 percent in Sub-Saharan Africa are of informal nature [ILO (2002)]. In case of India, out of the total workforce, 86.36% of the workers in 1999-00 and 86.32% of the workers in 2004-05 were absorbed in informal sector. About 91.17% of the total work force in 1999-00 and 92.38% of the total work force in 2004-05 were informal in nature [NSSO (1999-00) and NSSO (2004-05)]. In addition, informal sector is contributory for national output in primary, secondary and tertiary sectors, and exports. For instance, contribution of informal sector is 40 percent of the total industrial output and 35 percent of total exports [CUTS (2003)].

Given its contribution to the over all economic growth, it is important to understand how efficiently the informal sector's firms perform. The question may strikes in the researchers' mind that why should we bother about the efficiency of informal sector's enterprises. The answers of this question will be different depending upon the perspective of interested parties. From the nation's perspective, efficiency of informal sector's enterprises may be linked with efficiency of the whole economy because informal sector provides about 92% to total employment and contribute about 60% to Net Domestic Product (NDP). From the perspective of producers in informal enterprises in a globally competitive market environment, efficiency is estimated for enterprises to survive and maintain their market share. From the policy makers perspective knowledge of relative performance of enterprises in informal sector is important for current policy intervention.

In the Indian economy, several studies have focused their analysis on its impact on Indian economy. Kulshreshtha and Singh (1998) examined the contribution of unorganized segment and also the share of its different sub-sectors to NDP from 1980-81 to 1994-95. They found that though the contribution of the unorganized segment to the total NDP has been declining progressively over time, it accounts for a large share (over 60%) to the

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[1] Informal sector incorporates the unincorporated proprieties or partnership enterprises. In the unorganized sector, in addition to the unincorporated proprieties or partnership enterprises, enterprises run by cooperative societies, trust, private and limited companies are also covered. The informal sector can therefore, be considered as a sub-set of the unorganized sector (NSSO, 1999).

consumer goods industries. Subrahmanya (2002) described the structure, growth and importance of unorganized manufacturing sector in terms of its sub-sectors from 1978-79 to 1994-95 and found the growth of unorganized manufacturing sector in the early 1980s, and decline since mid 1980s. An overview of the unorganized sector in various key dimensions comparing with the organized sector from 1980-81 to 1998-99 is given by Kabra (2003). Rani and Unni (2004) analyzed the impact of economic reforms on the organized and unorganized manufacturing sector from 1984-85 to 1999-00, and found (a) economic reform policies had a differential impact by industry groups, and (b) automobile industry and the infrastructure sector helped the growth of the unorganized manufacturing industry. RBI (1993) reviewed on changing composition of net value added and relative growth rates between organized and unorganized sectors from 1980-81 to 1988-89 and argued for an increase in weights of secondary and tertiary sectors as against primary sector in terms of NDP.

In addition, several studies are available regarding the performance measurement of organized sector. In case of unorganized/informal sector, studies are not many that have focused on performance measurement. Rajesh and Duraisamy (2007) measured the technical efficiency and productivity performance of unorganized manufacturing enterprises across the states using Data Envelopment Analysis, and by using National Sample Survey data. Natarajan and Rajesh (2007) measured the technical efficiency levels in the unorganized manufacturing enterprises in Kerala utilizing a stochastic production frontier approach using firm-level data for the period 2000-01. Rajesh (2007) analyzed the size, growth and productivity performance of the unorganized manufacturing sector in India during 1978-79 to 2000-01. Total factor productivity growth in the unorganized manufacturing sector in India using several rounds of the large scale National Sample Survey state-level data for 15 major Indian states for the period 1978-79 to 2000-01 is measured by Rajesh and Duraisamy (2007).

Above studies on contribution and growth of the unorganized sector need further analysis, especially, with respect to changing economic policy regimes in India. For instance, a comparative analysis between the organized and unorganized sectors may be relevant under different foreign trade policy regimes. To fill these gaps, the first objective of this paper is to extend the above studies by analyzing growth, composition and contribution of the unorganized sector over a long period from 1970 through 2006; and focuses on a comparative analysis between the organized and unorganized sectors under different foreign trade policy regimes. In addition, disaggregation and comparison of growth of organized and unorganized NDP[2] by 9 sub-sectors (as classified by NAS) is attempted under different foreign trade policy regimes. In order to accomplish our goal, we have used annual data from National Accounts Statistics (1980 to 2008) on Net Domestic Product by organized and unorganized sectors at aggregate and disaggregate levels.

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[2] NDP is often used as a measure of sustainable growth, in the sense that it subtracts depreciation from GDP to indicate the amount of current product/income that should be set aside for the using up of capital stock in production during the current period (Landefeld and Fraumeni, 2001).

Most of the aforementioned studies regarding the performance measurement have focused only on the unorganized/informal manufacturing sector. But unorganized/informal sector is not limited only to manufacturing. It includes eight other sub-sectors. Studies are very limited that have explained and analyzed the performance measurement of the whole non-agricultural informal sector in India. To fill this gap, the second objective of this paper is to analyze the efficiency performance of the whole non-agricultural informal sector in India.

In economics literatures, several schools of thought have developed regarding the formal and informal sectors' relationship. According to first school, informal sector is an autonomous segment of the economy producing mainly for consumption within the sector. The second school believes that the informal sector has a dependent relationship with the formal sector and is exploited by the formal sector. According to the third school, the informal sector is integrated with the rest of the economy through complementary linkages. In India, the complementary linkage between the formal and informal sectors is taking place through sub-contracting. Unlike in the past, a large number of informal sector's firms in recent years are producing their products by receiving direct contracts from the formal firms/ agencies/ contractors. The contracts are on the sale of outputs, supply of raw materials and equipments etc. In this context, one can hypothesize that the firms having contracts with the formal firms/ agencies/ contractors may be more efficient because of better accessibility of inputs vis-à-vis the other firms. Moreover, the firms having contract on sale of outputs are in some extent free from the risk of market uncertainty of their products. On the basis of output market of the informal sector, one can sub-divide the firms into two broad categories. First, firms that posses secured market i.e., they have contract on the sale of output with formal firms/ agencies/ contractors. Secondly, firms don't have any secured market. This suggests that, one can hypothesize that the firms having secured market may be more efficient vis-à-vis the other firms. A test for this hypothesis may offer evidence for the market certainty.

This paper uses the Data Envelopment Analysis (DEA) to measure the efficiency of informal sector's enterprises. First, Efficiency scores of informal sector are computed by states/UTs. Given these scores, determinants of efficiency of the informal sector's firms are estimated. This estimation also tests the hypothesis whether or not the firms having contracts with formal firms/agencies/contractors and possessing secured market of their output would be more efficient in terms of output oriented technical efficiency vis-à-vis the other firms.

The rest of the chapter is organized as follows. Section-2 describes the methodology used for this study. Variables, measurements and data sources are discussed in section-3. The changes of policy regimes over the periods are discussed in section-4. In section-5, the trends in growth and composition of NDP by organized and unorganized sectors are examined. The disaggregation of growth by sub-sectors is analyzed in section-6. Efficiency of the informal enterprises and its determinants are discussed in section-7 and section-8 respectively. Section-9 and 10 include conclusions and some policy insights respectively.

2. Methodology

"The technical efficiency of a firm is a comparative measure of how well it actually processes inputs to achieve its outputs, as compared to its maximum potential for doing so, as represented by its production possibility frontier" (Barros and Mascarenhas, 2005). A firm is said to be technically inefficient if it operates below the frontier. Technical efficiency reflects the managerial performance to organize the inputs in the production process. Thus, technical efficiency scores can be used as an index to capture managerial performance. Technical efficiency scores can be computed either by using output oriented measure or input oriented measure i.e., either by output expansion or by input conservation. However, we focus on the output oriented efficiency. In an output oriented approach, given inputs, expansion of the output to the maximum extent possible is estimated.

Data Envelopment Analysis (DEA) is used in this study to compute the technical efficiency scores. DEA solves a linear programming problem. We have divided the methodology of this study into two parts.

Part-I

Following Ray (2004) we have set the linear programming problem to compute the efficiency scores. The linear programming problem can be written here

$$\textbf{Max } \Phi$$

Subject to

$$\sum_{i=1}^{n} \lambda_i A_i \geq \Phi A_i$$

$$\sum_{i=1}^{n} \lambda_i C_i \leq C_i$$

$$\sum_{i=1}^{n} \lambda_i L_i \leq L_i$$

$$\sum_{i=1}^{n} \lambda_i = 1$$

$$\lambda_i \geq 0$$

where, n = No. of states / sectors / enterprises.

Φ = Factor by which the output bundle can be expanded relative to the frontier constructed with input-output bundle of other best performing firm. i.e., Φ = 1/Technical Efficiency.

λ_i's are constants.

A_i = Gross value added by states / sectors / enterprises.

C_i = Capital by states / sectors / enterprises.

L_i = Labour by states / sectors / enterprises.

Part-II

We have selected two states (one is best performing state and another is least performing state) to find out the determinants of efficiency. This estimation has tested the hypothesis whether or not the firms having contracts with formal firms/ agencies/ contractors and possessing secured market would be more efficient in terms of output efficiency vis-à-vis

the other firms. In this context, we have also tested whether the determinants of efficiency are different for the best performing and least performing states.

Model-1: Technical efficiency of best performing state = $f(X_1, X_2, \ldots\ldots\ldots, X_n)$

Model-2: Technical efficiency of least performing state = $f(Y_1, Y_2, \ldots\ldots\ldots, Y_n)$

Then we have estimated $(X_1, X_2, \ldots\ldots\ldots, X_n)$ and $(Y_1, Y_2, \ldots\ldots\ldots, Y_n)$

Next, we have tested the following hypothesis:

Ho: Estimated $(X_1, X_2, \ldots\ldots\ldots, X_n)$ = Estimated $(Y_1, Y_2, \ldots\ldots\ldots, Y_n)$

Since DEA efficiency score lies between 0 and 1 and several units of the sample reach the value 1, the dependent variable in a model to explain the efficiency is at equal to 1 i.e., the dependent variable is 'a limited dependent variable'. So it is well known to us that ordinary least squares (OLS) generate biased and inconsistent estimates for censored data. So it is apt to use Tobit model for this situation. The Tobit model can be defined as

$$y = \begin{cases} y^*; 0 \leq y^* \leq 1 \\ 0; y^* \prec 0 \\ 1; y^* \succ 1 \end{cases}$$

$y^* = \beta xi + \varepsilon_t$

Where y is the DEA technical efficiency scores. y^* is latent (unobservable variable). β is the vector of unknown parameters which determines the relationship between the independent variables and latent variables. X_i is the vector of explanatory variables.

3. Variables, measurements and data sources

In order to accomplish the task stated above it is necessary to look at variables, and their measurements and data sources on growth of organized and unorganized sector. This is summarized below. Table-1a presents the variables, and measurement and data sources on contribution and growth of organized and unorganized sector. Table-1b presents the variables, and measurement and data sources on efficiency performance of informal sector in India.

Table-1a: Variables, and measurement and data sources on contribution and growth of organized and unorganized sector.

Variables	Measurement	Data Source	Remarks/ Limitations
Economic growth	Annual growth rate and annual average growth rate of NDP.	National Accounts Statistics	
Unorganized sector's growth	Annual growth rate and annual average growth rate of unorganized sector's NDP.	National Accounts Statistics	1) Current prices data are available from 1970-71 through 2005-06. 2) Data at different constant prices are available, but the data based on a single base year price are not available and hence not comparable. 3) Separate data are not

			available for unorganized and informal sector.
Organized sector's growth	Annual growth rate and annual average growth rate of organized sector's NDP.	National Accounts Statistics	1) Current prices data are available from 1970-71 through 2005-06. 2) Data at different constant prices are available, but the data based on a single base year price are not available and hence not comparable.
Organized and unorganized sector's growth by sub-sectors 1) Agriculture, forestry & logging and fishing 2) Mining and quarrying 3) Manufacturing 4) Electricity, gas and water supply 5) Construction 6) Trade, hotel and restaurants 7) Transport, storage and communication 8) Financing, insurance, real estate and business services 9) Community, Social and personal services	Annual growth rate and annual average growth rate of organized and unorganized sector's NDP by 9 sub-sectors.	National Accounts Statistics	1) Current prices data are available for each sub-sector from 1970-71 through 2005-06. 2) Data at different constant prices are available for each sub-sector, but the data based on a single base year price are not available and hence not comparable.

To accomplish the second objective we have used the unit level data from National Sample Survey (55th round) on "informal sector in India 1999-00: Salient Features" in 1999-2000. To compute the technical efficiency scores the basic variables used here output, labour and capital. The details of the data, variable and measurements are given below.

Table-1b: Variables, and measurement and data sources on efficiency performance of informal sector in India.

Variables	Measurement	Definition	Data sources
Output	Gross Value added	Gross value added can be measured by two ways: production approach and factor income approach. We	NSS 55th round unit level information.

		will use the production approach in the present study.	
Capital	Gross fixed assets	Capital includes market value of owned land and building (a1), plant and machinery (a2), transport equipment (a3), other fixed asset (a4), net additions of fixed assets during last 365 days (b1), market value of hired assets like land and building (c1), plant and machinery (c2), transport equipment (c3), other fixed asset (c4) i.e., capital = a1 + a2 + a3 + a4 + b1 + c1 + c2 + c3 + c4.	NSS 55th round unit level information.
Labour	Number of workers	Number of workers.	NSS 55th round unit level information.

4. Select policy regimes during 1970-71 to 2005-06

For the purpose of relating growth rates to economic policy regimes, we have divided the study period into six phases. Following Srinivasan (1994), in phase-I and II, India followed import-substituting industrial strategies but had not given much emphasis on exports. Since the phase-III, India moved away from inward looking economic policies and gradually towards opening up. To make the economy more integrated with the global economy, policy makers initiated trade liberalization (phase-IV), started moving away from a quantitative restrictions regime to a tariff based regime and also started reducing their average level of protection. We have added phase-V and phase-VI. The establishment of WTO in 1995 has accelerated trade liberalization (phase-V). In the phase-VI, measures announced in the annual EXIM Policy 2001 have helped to strengthen the export production base and facilitate input availability besides focusing on quality and technological upgradation and improving competitiveness. The sub-contracting in the formal sector is taking place significantly in this period. The details of the policy highlights in different phases are summarized in Table-2.

Table-2: Trade policy regimes in India.

Phase	Period	Policy highlights/ regime
Phase-I	1971-72 to 1975-76	1. Import premia rose but not as high as immediately before devaluation i.e., import policy became increasingly restrictive and complex. 2. Import allocation criteria became more complex and subject to marginal conditions. 3. Tariff rates were gradually escalated. 4. Export subsidies were reinstated and augmented. 5. Industrial licensing reverted to its severely restrictive mode.
Phase-II	1976-77 to 1985-86	1. Import allocation rules were made simpler and most non-competing 'essential' imports were liberalized. 2. Protective quotas remained intact and domestic

		industry continued to be completely shielded from import competition.
Phase-III	1986-87 to 1990-91	Open general license (OGL) (i.e., a license to import but with no quantitative restrictions) for capital goods increased.
Phase-IV	1991-92 to 1995-96	1. Devaluation of the rupee. 2. Abolition of import licensing. 3. Replacement of cash subsidies for exports by exim scrips (freely salable rights to imports linked to exports) and partial convertibility of the rupee under which exporters could sell 60 percent of their foreign exchange receipts at a market determined exchange rate. 4. Abolition of industrial licensing except for investment in eighteen industries. 5. Relaxation of restrictions on large industrial houses under the Monopolies and Restrictive Trade Practices Act. 6. Easing of entry requirements (including equity participation) for direct foreign investment. 7. Allowance of private investment in some industries hitherto reserved for public sector investment.
Phase-V	1996-97 to 2000-01	The setting up of WTO (World Trade Organization) in 1995 has intensified trade liberalization by removing restrictions on foreign direct investment.
Phase-VI	2001-02 to 2005-06	1. The EXIM Policy has completed the process of removal of QRs on BOP grounds by dismantling restrictions on the remaining 715 items. However, necessary defensive mechanisms have been put in place to provide level playing field to domestic players vis-à-vis imports. 2. Agri Economic Zones was set up to promote agricultural exports on the basis of specific products and specific geographical areas. 3. Market Access Initiative (MAI) scheme was introduced to boost exports. 4. The scheme of Special Economic Zones (SEZs) has been liberalized further by granting permission to SEZ developers for duty free import/procurement from DTA. 5. The Export Promotion Capital Goods Scheme (EPCG) has been further strengthened. 6. Annual Advance Licence scheme liberalized.

Source: Phase-I to Phase-IV [Srinivasan (1994)], Phase-VI [Economic Survey (2001-02)].

5. Trends in growth and composition of NDP by organized and unorganized sectors

Our analysis considers the trends and growth of both the unorganized and organized sectors' NDP during thirty-five years (1970-71 to 2005-06). For netting out the effect of inflation, current prices data are converted into constant (1999-00 base year) prices, using

price indices of different base year (1970-71, 1980-81, 1993-94 and 1999-00). The trends of unorganized and organized sectors' NDP are presented in figure-1.

Fig-1: The trends of contribution of unorganized and organized sectors' NDP.
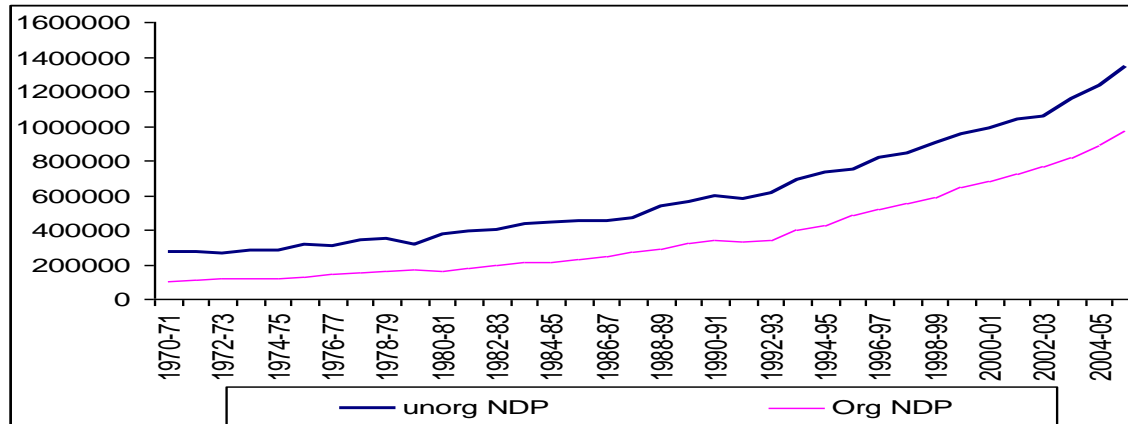
From the above figure it is seen that both the curves have exponential trend. The equation of the trend will be $\mathbf{Y_t = ae^{bt}}$, where Y_t is the NDP (unorganized and organized), t is time, a and b are constants. As we want to run a liner regression of NDP on time, we have to make the exponential trend into linear trend.

$$\text{Hence,} \quad \mathbf{Log\ Y_t = Log\ a + bt}$$
$$\text{Or,} \quad \mathbf{Log\ Y_t = a' + bt}$$

By estimating the above equation for unorganized and organized sectors we get the following results.

Table-3: Estimated trend equations for the unorganized and organized sectors.

Sector	Intercept	Regression coefficient	R^2
Unorganized	12.32* (593.81)	0.05* (47.89)	0.98
Organized	11.38* (542.76)	0.07* (65.58)	0.99

Note: t-values are in the parenthesis and * shows 1 percent level of significance.
Source: Author's Calculation.

The positive and statistically significant coefficients of regression reflect a definite and significant increase in that sector with the passage of time. From the above estimates it is seen that organized sector's growth is slightly higher than the unorganized sector's growth.

The contribution of unorganized and organized sectors in terms of their percentage share in total NDP are presented in figure-2. This figure shows higher share of unorganized sector than organized sector. However, during this period there has been a decreasing trend in the percentage share of unorganized sector, while the organized sector has shown an increasing trend (Figure-2). Though there is a decreasing trend of the unorganized sector's share, still it has large share (almost 60%) in total NDP.

Fig-2: Percentage Share of Unorganized and Organized Sector in Total NDP at constant prices (1999-00 Prices) from 1970-71 to 2005-06.
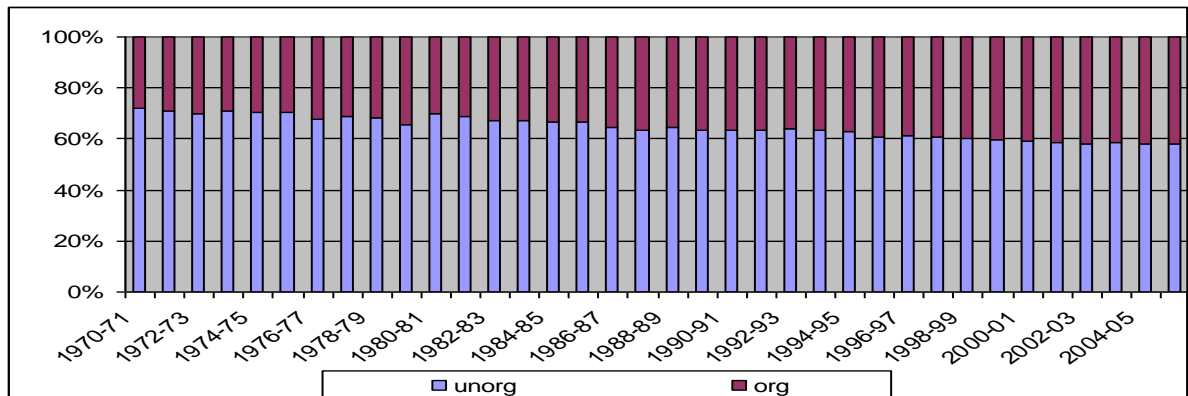
Growth of organized and unorganized sector's NDP can be described by annual growth rate and annual average growth rate (AAGR). Figure-3 shows the trends of annual growth rates of organized and unorganized sector's NDP during 1971-72 to 2005-06.

Fig-3: Comparison between the annual growth rates of NDP-unorganized Sector and NDP-organized Sector.
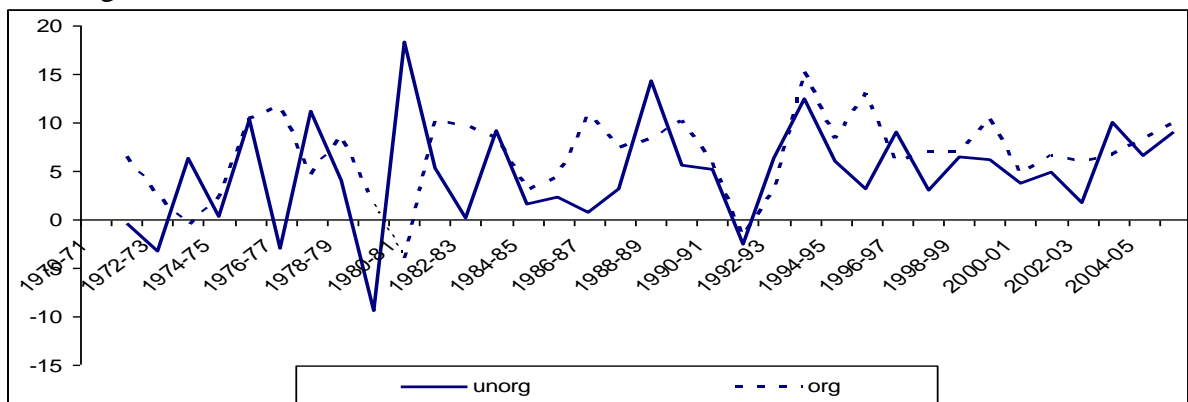
From the above figure it is seen that there is no consistency of the growth rates of both the unorganized and organized sectors. The much fluctuation in growth rate is accounted for the unorganized sector. For instance, the growth rate of unorganized sector reached its lowest level (-9.39%) in 1979-80 and highest level (18.25%) in 1980-81. On the other hand, the growth rate of organized sector reached its lowest level (-3.93%) in 1980-81 and highest level (10.38%) in 1975-76. For getting a clear picture of trends in growth rate we have computed annual average growth rate (AAGR[3]) of both unorganized and organized sectors of aforementioned (in section-4) six phases in the Indian economy. The trends in growth of organized and unorganized NDP by AAGR during the six phases are shown in figure-3A.

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[3] AAGR = $\sum$ (Annual Growth Rates) / No. of years.

Fig-3A: Comparison between Annual Average Growth Rate (AAGR) of NDP-Unorganized and NDP-organized.
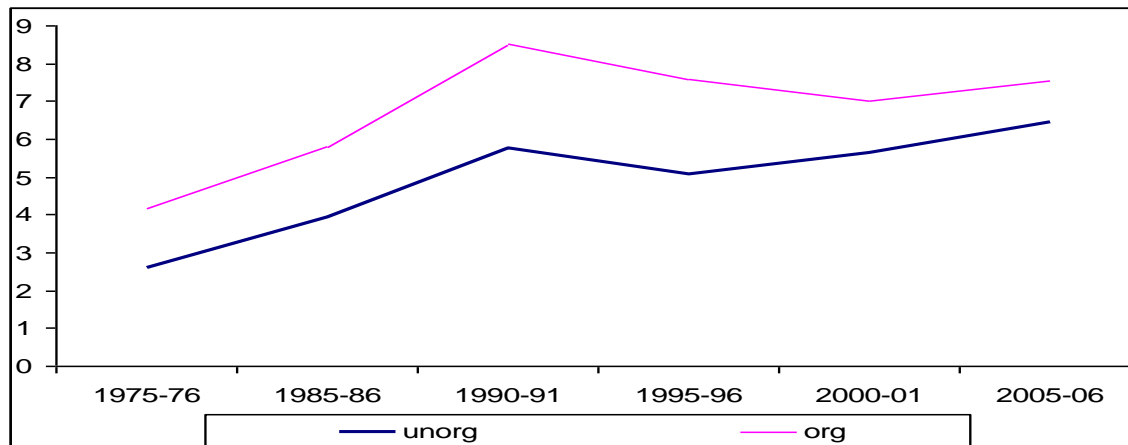
From the above figure it is seen that both the curves have increasing trend in Phase-II and III. But the rate of increase of the organized sector is slightly higher than the unorganized sector. But in Phase-IV, both the sectors have decreasing trend in growth. This implies that just after trade liberalization both the sectors were unable to compete with foreign firms in the open economic framework. But in phase-V, organized sector has decreasing trend, while unorganized sector has increasing trend and both the trend curves are converging towards each other. In the phase-VI, both unorganized and organized sectors are increasing at increasing rate. It is stated in section-4 that in the last phase there is a forward linkage taking place between the organized and unorganized sectors through sub-contracting i.e., the relationship between the two sectors is complementary. As a result of that the expansion of organized firms helps to expand the unorganized firms as well. So both the curves have increasing trend in this phase. To substantiate our argument it is necessary to give some evidence regarding sub-contracting in the Indian economy. The nation-wide NSSO 1999-00 survey on informal sector's enterprises is first of its kind to give information about the magnitude of sub-contracting of informal sector in India. 2000-01 and 2005-06 surveys on unorganized manufacturing enterprises also provide information about sub-contracting of the unorganized manufacturing sector. The proportion of enterprises operating under sub-contracting is presented in table-4.

Table-4: proportion of enterprises operating under sub-contracting.

Year	Sector/sub-sector	% of units operating on contracts
1999-2000	Sub-sectors of informal sector:	
	1) manufacturing	17
	2) construction	23.5
	3) trade and repair services	1.1
	4) hotels and restaurants	1.1
	5) transport, storage and communication	2.7
	6) other service sector	2.9
	Total informal sector	7.2
2000-01	Unorganized manufacturing sector	30.7
2005-06	Unorganized manufacturing sector	31.7

Source: Author's calculation by using NSS reports and unit level data.

From the above table it is seen that 7.2% of total enterprises of the informal sector in 1999-00 were operating under sub-contracting. In 1999-00, 17 % of the informal manufacturing units were operating on contracts, while 30.7% of the unorganized manufacturing units were operating on contracts in 2000-01. So a significant percentage of sub-contracting increases within one year. In 20005-06, 31.7% of the unorganized manufacturing units were operating on contracts. On the basis of these evidence it can be argued that significant amount of forward linkages between the organized and unorganized sectors through sub-contracting is taking place in the last phases (2000-01 to 2005-06) of our study period.

For getting a clear picture about which sub-sector/sub-sectors have much share in organized and unorganized sectors and contributing more to making the shape of the growth curves, we should discuss the disaggregation analysis of growth by sub-sectors.

6. Disaggregation of growth by sub-sectors

A disaggregate analysis of the NDP by nine sub-sectors in the unorganized and organized sectors is described below. The industry classification is the same as in the National Accounts Statistics. These are 1) agriculture, forestry, logging and fishing, 2) mining and quarrying, 3) manufacturing 4) electricity, gas and water supply, 5) construction, 6) trade, hotels and restaurants, 7) transport, storage and communication, 8) financing, insurance, real estate and business services and 9) community, social and personal services. First, we have measured the share of unorganized and organized sector in a sub-sector. Secondly, we have measured the share of each sub-sector in whole unorganized and organized sectors.

Figure-4 to figure-12 present the share of unorganized and organized sectors in nine sub-sector's NDP.

Fig-4: % share of organized and unorganized sectors in agriculture, forestry & lodging and fishing.

Fig-5: % share of organized and unorganized sectors in mining and quarrying.

Fig-6: % share of organized and unorganized sectors in manufacturing.

Fig-7: % share of organized and unorganized sectors in electricity, gas and water supply.

Fig-8: % share of organized and unorganized sectors in construction.

Fig-9: % share of organized and unorganized sectors in trade, hotels and resturants.

Fig-10: % share of organized and unorganized sectors in transport, storage and communication.

Fig-11: % share of organized and unorganized sectors in financing, insurance, real estate and business services.

Fig-12: % share of organized and unorganized sectors in community, social and personal services.

From the above nine figures (fig-4 to fig-12) it is seen that the unorganized sector's share in sub-sector-I and VI is much grater than the organized sector's share. Though the unorganized sector's share in both the sub-sectors decreases, still the shares are almost above 90% and 80% over the time respectively. The completely opposite picture has been seen in case of sub-sectors-II, III, IV and IX where organized sector's share are almost more than 90%, 60%, 95% and 70% over the time respectively. Both organized and unorganized sectors have more or less same shares in sub-sectors-V, VII and VIII.

Figure-13 and figure-14 represents the different sub-sectors' share in total unorganized and organized sectors respectively.

Fig-13: Shares of different sub-sectors in the total unorganized sector.

Fig-14: Shares of different sub-sectors in the total organized sector.

From the above two figures it is observed that though share of sub-sector-1 (i.e., agriculture, forestry & logging and fishing) is decreasing over time, still it has highest share in unorganized sector's NDP. Sub-sector-6 (i.e., trade, hotels and restaurants) has the highest share in non-agricultural unorganized sector's NDP. On the other hand, sub-sector-3 (i.e., manufacturing) and sub-sector-9 (i.e., community, social and personal services) have the greater shares than others in organized sector's NDP. Now we are interested to see the growth rate of the each sub-sectors and their contribution to the total sector's growth.

The rate of growth of NDP by sub-sectors is computed by using the Annual Average Growth Rate (AAGR) of different sub-sectors[4] of the unorganized and organized sectors. Table- 5 and 6 shows the over time trend of AAGR by sub-sectors of unorganized and organized sectors respectively. From these two tables, we can single out the sector/sectors which contributes/contribute more to making the shape for whole unorganized and organized sectors. At first, we will discuss the trends of AAGR of the nine sub-sectors in six phases separately.

Table-5: Annual Average Growth Rate (AAGR) of the Unorganized Sector by sub-sectors from 1975-76 to 2005-06 (at 1999-00 prices).

Year	S1	S2	S3	S4	S5	S6	S7	S8	S9	ALL
1971-72 to 1975-76	2.09	4.05	4.26	0	1.26	5.36	5.93	-1.80	1.22	2.61
1976-77 to 1985-86	3.01	8.63	7.73	0	2.09	4.26	5.21	14.38	10.83	3.93
1986-87 to 1990-91	4.36	7.40	7.82	-2.82	10.14	6.61	8.49	4.40	10.37	5.77
1991-92 to 1995-96	4.08	10.13	3.57	35.05	1.55	7.01	1.73	25	3.17	5.06
1996-97 to 2000-01	1.17	8.07	4.27	-3.77	9.60	7.42	18.07	12.73	16.28	5.63
2001-02 to 2005-06	2.64	9.11	3.50	20.44	11.02	7.84	18.84	5	8.92	6.43

Source: Author's Calculation.

From the above analysis, it can be observed that the trend in growth of subsector-5 (i.e., construction) is same with the trend of whole unorganized sector's growth for the entire study period. Except last phase, sub-sector- 9 (i.e., community, social and personal services) and 3 (i.e., manufacturing) contributes more to making the shape of the whole unorganized sector i.e., in the pre-sub-contracting period these two sectors contribute more to making the shape for the whole unorganized sector. Except phase-V, the trend in growth of subsector-1 (i.e., agriculture, forestry & logging and fishing) is same with the trends of whole unorganized sector's growth. In the sub-contracting period, sub-sector-4 (electricity, gas and water supply) has major contribution in making the shape for whole unorganized sector.

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[4] In the table-6 and 7, S1 to S9 represents the Annual Average Growth Rate (AAGR) by sub-sectors 1 to 9 respectively.

Table-6: Annual Average Growth Rate (AAGR) of the organized sector by sub-sectors from 1975-76 to 2005-06 (at 1999-00 prices).

Year	S1	S2	S3	S4	S5	S6	S7	S8	S9	ALL
1971-72 to 1975-76	3.98	13.09	4.13	4.57	1.48	10.67	0.66	10.93	5.35	4.19
1976-77 to 1985-86	4.57	4.05	6.60	5.35	7.05	4.67	1.22	10.59	6.69	5.80
1986-87 to 1990-91	0.13	10.53	8.73	9.35	3.45	3.44	6.12	12.29	11.28	8.52
1991-92 to 1995-96	5.04	8.70	7.09	10.10	6.01	21.65	7.79	15	3.79	7.57
1996-97 to 2000-01	31.32	5.28	3.16	9.72	2.13	10.57	9.09	7.62	8.71	7.01
2001-02 to 2005-06	4.95	5.24	7.60	3.86	12.36	13.22	9.03	10.35	4.16	7.52

Source: Author's Calculation.

In case of organized sector, it is observed that the trend in growth of subsector-3 (i.e., manufacturing) is same with the trend of whole organized sector's growth for the entire study periods. Except phase-III and IV, the trend in growth of subsector-5 (i.e., construction) is same with the trend of whole organized sector's growth. Except last phase, sub-sector-4 (i.e., electricity, gas and water supply) has the same trend with the organized sector for the entire period.

To see the contribution of each sub-sector to whole unorganized or organized sectors' growth, we have decomposed[5] the total sector's growth by sub-sectors. Decomposition of growth rate of unorganized and organized sectors is presented in figure-15 and 17 respectively.

Fig-15: Decomposition of growth rate of the Unorganized Sector by sub-sectors from 1975-76 to 2005-06 (at 1999-00 prices).
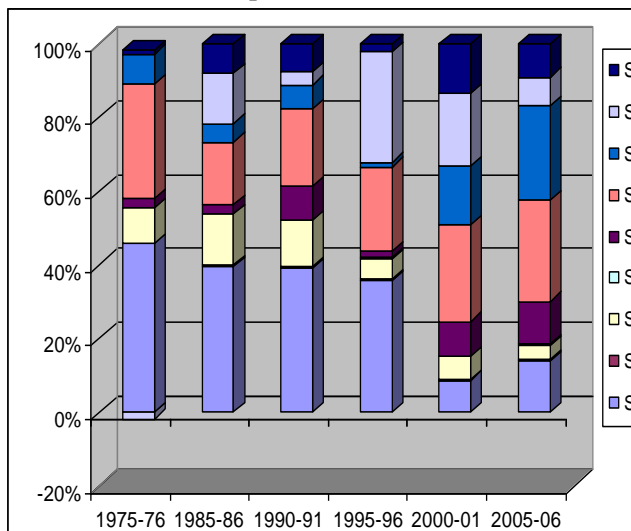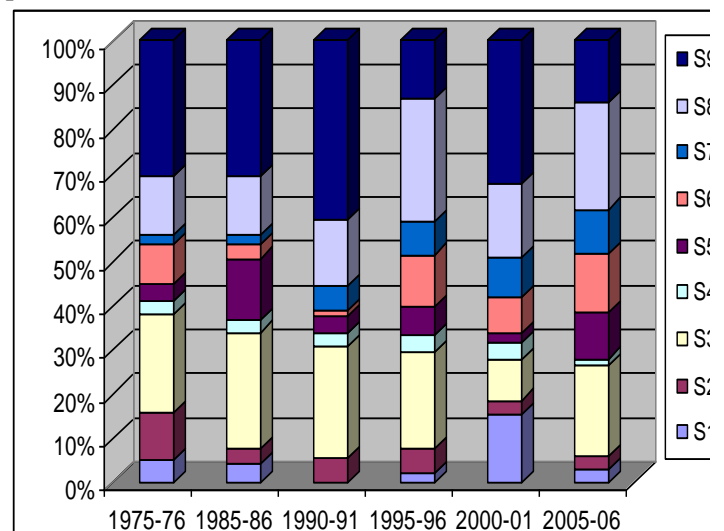

Fig-16: Decomposition of growth rate of the Unorganized Sector by sub-sectors from 1975-76 to 2005-06 (at 1999-00 prices).

[5] Each sub-sector's growth rate = $\{(W_i\,G_i)/100\} * \{G/\sum_{i=1}^{n}(W_i\,G_i)\}$, where W_i = Percentage share of each sub-sector, G_i = Growth rate of each sub-sector and G = total sector's (unorganized or organized) growth rate.

From the above figure it is seen that sub-sector-1 and 6 have the major contribution in the overall unorganized sector's growth, while sub-sector-1's contribution has been decreasing over time. In case of organized sector, sub-sectors-3, 8 and 9 have the major contribution in the overall sector's growth.

7. Efficiency of the informal enterprises

The linear programming problem stated in section-2 is solved to compute the efficiency scores by states/UTs. The technical efficiency and inefficiency scores of the informal enterprises by states/UTs are presented in table-7.

Table-7: Technical efficiency and inefficiency of the informal enterprises by states/UTs.

State/UT	Technical Efficiency	Technical Inefficiency
Andhra Pradesh	0.495	50.5
Arunachal Pradesh	1	0
Assam	0.439	56.1
Bihar	0.403	59.7
Delhi	1	0
Goa	0.566	43.4
Gujarat	0.798	20.2
Haryana	0.493	50.7
Himachal Pradesh	0.662	33.8
Jammu & Kashmir	0.515	48.5
Karnataka	0.584	41.6
Kerala	0.587	41.3
Madhya Pradesh	0.47	53
Maharashtra	1	0
Manipur	0.422	57.8
Meghalaya	0.443	55.7
Mizoram	1	0
Nagaland	0.377	62.3
Orissa	0.226	77.4
Punjab	0.587	41.3
Rajasthan	0.682	31.8
Sikkim	0.397	60.3
Tamil Nadu	0.631	36.9
Tripura	0.385	61.5
Uttar Pradesh	0.859	14.1
West Bengal	1	0
A & N Islands	0.465	53.5
Chandigarh	1	0
Dadra & Nagar	0.362	63.8
Daman & Diu	0.454	54.6
Lakshadweep	1	0
Pondicherry	0.51	49
mean	0.619	38.1

*Technical inefficiency = (1 – TE) * 100

Source: Author's calculation.

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From the above table it is seen that there is a large disparity among the states/UTs in terms of the technical efficiencies. The states/UTs with technical efficiency score equal to 1 is treated as efficiently performing unit. On the other hand, the state's/UT's efficiency scores less than 1 is treated as relatively inefficient. Among the 32 states/UTs, 8 states/UTs are performing efficiently since they have the efficiency score 1. The best performing states/UTs are Arunachal Pradesh, Delhi, Maharashtra, Mizoram, West Bengal, Chandigarh and Lakshadweep. The other 24 states are inefficient i.e., they can improve their efficiency by expanding output level using the same amount of inputs. The technical efficiency scores among the inefficient states range from 0.226 for Orissa to 0.859 for Uttar Pradesh. From the result it can be stated that Orissa can potentially expand their output level 77.4% by using the same level of inputs.

From the 32 states/UTs we have chosen two states/UTs to compute the technical efficiency scores of each enterprise of the informal sector and also to find out the determinants of efficiency of informal enterprises. We have taken Delhi as a representative of best performing state since it has technical efficiency score 1. Orissa is representing the least performing firm since it has lowest technical efficiency scores 0.226. After removing the outlier the sample size of Delhi is 1689 and Orissa is 3000. In this context, it is important to see which sub-sector/sub-sectors in the informal sector is/are performing better. The enterprise survey of NSS 55th Round covers all the informal enterprises in the non-agricultural economy, excluding those engaged in mining and quarrying, and electricity, gas and water supply. So in this paper we will concentrate only on six sub-sectors/ industry groups viz. i) manufacturing, ii) construction, iii) trade and repair services, iv) hotels and restaurants, v) transport, storage and communications and vi) other service sector enterprises. Table-8 and 9 present the descriptive statistics of output-oriented pure technical efficiency of Delhi and Orissa respectively.

Table-8: Descriptive statistics of output-oriented pure technical efficiency of Delhi.

	N	Minimum	Maximum	Mean	Std. Deviation	
All Sectors	1689	0.018	1	0.19792	.168414	
Manufacturing	499	0.033	1	0.16568	.125564	
Construction	42	0.070	1	0.44183	.303082	
Trade and repair services	538	0.018	1	0.19793	.166307	
Hotels and restaurants	140	0.027	1	0.21002	.184187	
Transport, storage and communication	168	0.032	1	0.26127	.200352	
Other service sector	302	0.022	1	0.17637	.142772	

Source: Author's calculation.

Table-9: Descriptive statistics of output-oriented pure technical efficiency of Orissa.

	N	Minimum	Maximum	Mean	Std. Deviation	
All Sectors	3000	0.167	1	0.52760	.232471	
Manufacturing	1058	0.167	1	0.50419	.237038	
Construction	21	0.248	1	0.60371	.254176	
Trade and repair services	1090	0.169	1	0.54910	.229552	
Hotels and restaurants	283	0.177	1	0.58720	.221323	
Transport, storage and communication	166	0.178	1	0.44460	.218020	
Other service sector	382	0.171	1	0.51881	.223124	

Source: Author's calculation.

From table-8 and 9 it is seen that construction sector has highest efficiency in both the states. Manufacturing sector has lowest average efficiency in Delhi, while transport, storage and communication sector has the lowest average efficiency in Orissa. In Delhi, except manufacturing and other service sectors, all other sectors' average efficiency scores are greater than the average efficiency score of all sectors. On the other hand, except manufacturing, transport, storage and communication, and other service sectors in Orissa, all other sectors' average efficiency scores are greater than the average efficiency score of all sectors. So from the above analysis it is observed that manufacturing and other service sectors are common whose efficiency is less than the average of all sectors' efficiency in both the states. As Delhi and Orissa lies in different frontier, we can not compare one particular sub-sector's efficiency scores between the two state/UTs. More specifically, efficiency scores of the enterprises in Delhi is computed in comparison with the best performing firm in Delhi and efficiency scores of the enterprises in Orissa is computed in comparison with the best performing firm in Orissa. Thus, it is on stake if we compare the efficiency scores of one particular sub-sector between the two states. However, we can compare the rank of the sub-sectors between the two states/UTs. Rank of the sub-sectors of Delhi and Orissa is presented in table-10.

Table-10: Rank of the sub-sectors of Delhi and Orissa.

Sectors	Delhi	Orissa
Manufacturing	6	5
Construction	1	1
Trade and repair services	4	3
Hotels and restaurants	3	2
Transport, storage and communication	2	6
Other service sector	5	4

Source: Author's calculation.

From the above table it is seen that construction sector is the best performing sector for both Delhi and Orissa, while manufacturing is the least performing sector in Delhi and transport, storage and communication in Orissa. Manufacturing is the 5th position in Orissa.

In recent years, a large number of informal sector's firms are producing their products by receiving direct contract from the formal firms/ agencies/ contractors. From table-4 it is

seen that 7.2% of the total enterprises in the informal in 1999-00 were operating under sub-contracting. The sub-contraction is taking place significant amount on the manufacturing (17%) and construction (23.5%) sectors. The highest percentage of sub-contracting is taking place in the best performing sector (i.e., construction), while the second highest percentage of sub-contracting is taking place in the least performing sector (i.e., manufacturing). So from this result it can not be concluded whether sub-contracting making the informal firms more efficient or inefficient. So the study requires some deeper analysis.

The contract is taking place both on supply of inputs and sale of outputs. The input contracts are on 1) supply of equipments 2) supply of raw materials 3) specification of design. To test the hypothesis whether or not the firms having contracts with the formal firms/ agencies/ contractors is more efficient because of better accessibility of inputs vis-à-vis the other firms, it is necessary to find out the efficiency scores of the contracted and un-contracted firms on the basis of the different contracts on supply of inputs separately.

On the basis of the source of equipment the firms who are working under contracts can be subdivided into three groups. These are a) self-procured, b) equipment supplied by master unit/ contractor and c) both self-procured and also supplied by master unit/ contractor. Efficiency of these three groups is presented in table-11.

Table-11: Comparison among the average efficiency of the different groups of firms by the Source of equipment.

Delhi							
Categories	No. of firms	Percent	Cumulative Percent	Max eff	Min eff	Mean	Standard Deviation
a	148	78.3	78.3	0.033	0.759	0.187	0.131
b	26	13.8	92.1	0.049	0.749	0.196	0.190
c	12	6.3	98.4	0.084	0.308	0.149	0.064
missing	3	1.6	100.0				
Orissa							
a	114	68.3	68.3	0.182	1.000	0.458	0.212
b	48	28.7	97.0	0.186	0.928	0.497	0.209
c	2	1.2	98.2	0.627	0.679	0.653	0.037
missing	3	1.8	100.0				

Source: Author's calculation.

The firms where equipment supplied by master unit/contractor are most efficient in Delhi, while the 3rd group (i.e., equipment is self-procured and also supplied by the master unit/contractor) is most efficient in Orissa. From the results it can be concluded that regarding the source of equipment those firms having contract with the master unit/ contractor are more efficient than others in both the states.

Following the same manner on the basis of source of raw-materials the contracted firms are again subdivided into three groups. These are a) self-procured, b) raw-material supplied by master unit/ contractor and c) both self-procured and also supplied by master unit/ contractor. Efficiency of these three groups is presented in table-12.

Table-12: Comparison among the average efficiency of the different groups of firms by the source of raw material.

Categories	No. of firms	Percent	Cumulative Percent	Max eff	Min eff	Mean	Standard Deviation	
Delhi								
a	44	23.3	23.3	0.048	0.759	0.214	0.155	
b	118	62.4	85.7	0.033	0.749	0.186	0.139	
c	24	12.7	98.4	0.034	0.311	0.137	0.074	
missing	3	1.6	100.0					
Orissa								
a	25	15.0	15.0	0.184	0.986	0.460	0.199	
b	112	67.1	82.0	0.186	1.000	0.469	0.210	
c	27	16.2	98.2	0.182	0.957	0.492	0.231	
missing	3	1.8	100.0					

Source: Author's calculation.

In terms of sources of raw materials, self procured firms are most efficient in Delhi, while the 3rd group (i.e., raw materials are self-procured and also supplied by the master unit/contractor) is most efficient in Orissa. So the firms are having earlier contracts on supply of raw materials are less efficient in Delhi but more efficient in Orissa.

On the basis of sources of design specification, the firms are divided into two groups: a) design is specified by the contractor b) design is not specified by the contractors. The efficiency of these two groups is presented in table-13.

Table-13: Comparison among the average efficiency of the different groups of firms by sources of design specification.

Categories	No. of firms	Percent	Cumulative Percent	Max eff	Min eff	Mean	Standard Deviation	
Delhi								
a	149	78.8	78.8	0.033	0.759	0.175	0.124	
b	38	20.1	98.9	0.073	0.723	0.228	0.176	
missing	2	1.1	100.0					
Orissa								
a	143	85.6	85.6	0.182	1.000	0.477	0.210	
b	23	13.8	99.4	0.184	0.986	0.433	0.219	
missing	1	0.6	100.0					

Source: Author's calculation.

From the above table it is seen that the firms where the design is not specified by the contractor are more efficient in Delhi. In Orissa, the firms where design is specified by the contractor are more efficient.

Moreover, the firms having contract on sale of outputs are in some extent free from the risk of market uncertainty of their products. In this context, we can test the hypothesis that the firms having secured market are more efficient vis-à-vis the other firms. On the basis of the output contracts, the firms can be subdivided into four groups. These are a) working solely for the enterprise or contractor, b) mainly for contract but also for other

customers, c) mainly for customers but also on contracts and d) solely for customers. Efficiency of these four groups is presented in table-14.

Table-14: Comparison among the average efficiency of the different groups of firms by different types of contracts.

Categories	No. of firms	Percent	Cumulative Percent	Max eff	Min eff	Mean	Standard Deviation	
Delhi								
a	103	54.5	54.5	0.049	0.677	0.178	0.111	
b	43	22.8	77.2	0.033	0.749	0.161	0.122	
c	25	13.2	90.5	0.055	0.723	0.238	0.213	
d	17	9.0	99.5	0.087	0.759	0.214	0.161	
missing	1	.5	100.0					
Orissa								
a	78	46.7	46.7	0.182	1.000	0.487	0.233	
b	12	7.2	53.9	0.186	0.928	0.497	0.209	
c	18	10.8	64.7	0.215	0.986	0.458	0.190	
d	57	34.1	98.8	0.203	0.845	0.452	0.185	
missing	2	1.2	100.0					

Source: Author's calculation.

From table-14 it is seen that the firms who are working mainly for customers is most efficient and the firms working solely for customers is in second position in Delhi. The other groups of firms (firms working solely for the enterprise or contractor and firms working mainly for contract but also for other customers) are less efficient. So it can be concluded that the contracted firms are less efficient in Delhi. But the results are completely opposite in Orissa. In Orissa, firms working mainly for contract as well as for other customers are most efficient and firms working solely for the enterprise or contractor are in second position. So contracted firms are more efficient in Orissa.

From the descriptive statistics of the efficiency performance it is seen that the results of Delhi and Orissa contrast each other. In Delhi, empirical analysis supports that contracted firms are less efficient, while contracted firms are more efficient in Orissa. So it is very difficult to conclude whether contracts with the formal firms/agencies/contractors making the informal firms more efficient or inefficient. One may interested to know why the relationship between contracts and efficiency is opposite for the two states. The relationship may depend on the other important factors. To draw a robust conclusion it is very much important to find out the determinants of efficiency by incorporating the other relevant variables.

8. Determinants of efficiency

Considering the characteristics of the informal sector in India, the explanatory variables which are considered in the Tobit model to estimates the factors which determine the efficiency of informal sector's enterprises are of three types 1) Operational factor, 2) locational factor, 3) sub-contracting factor. Operational factor includes a) type of ownership, b) Nature of operation, c) source agency for purchase of basic inputs, d) destination agency for sale of final product/ service, e) problem face the enterprises and f)

size of the enterprises. Locational factor includes a) location of the enterprises. Sub-contracting factor includes contracts on sale of output and supply of inputs. The detailed description of variables used for Tobit model is given in table- 15.

Table-15: The detailed description of variables used for Tobit model.

Variables	Description
1) type of ownership	D1= 1, if proprietary ownership = 0, otherwise
2) location of enterprise	D2= 1, if within household premises = 0, otherwise
3) Nature of operation (perennial, seasonal and casual)	D3= 1, perennial =0, otherwise

4) source agency for purchase of basic inputs	D4= 1, government
	   =0, otherwise
	D5= 1, co-operative/marketing society
	   =0, otherwise
	D6= 1, private enterprise/ individual/ household
	   = 0, otherwise
	D7= 1, contractor/middleman
	   = 0, otherwise

5) destination agency for sale of final product/ service	D8= 1, government
	    =0, otherwise
	D9= 1, co-operative/marketing society
	   =0, otherwise
	D10= 1, private enterprise/ individual/ household
	   = 0, otherwise
	D11= 1, contractor/middleman
	   = 0, otherwise

6) problem faced	D12= 1, shortage of capital
	    = 0, otherwise
	D13= 1, Problem of lighting facilities/ power cut.
	    =0, otherwise
	D14= 1, lack of market
	    =0, otherwise
	D15= 1, competition from larger units
	    = 0, otherwise

7) contracting	D16= 1, working mainly for contract
	    = 0, otherwise
	D17= 1, equipment supplied by contractors
	    = 0, otherwise
	D18= 1, raw materials supplied by contractors
	    = 0, otherwise
	D19= 1, design specified by contractors
	   =0, otherwise

8) size of the enterprise	D20= 1, large = 0, otherwise

The estimation results for the Tobit model of Delhi and Orissa are presented in table-16 and table-17 respectively.

Table-16: Estimation results (Tobit model) of the determinants of informal sector in Delhi.

Efficiency	Coefficient	Standard Error	t-value	P-value
Constant	0.37111*	0.043357	8.56	0
D1	-0.02347	0.026183	-0.9	0.37
D2	-0.05478**	0.02184	-2.51	0.012
D3	-0.03651*	0.008938	-4.08	0
D4	-0.12645*	0.040108	-3.15	0.002
D5	-0.03308	0.062476	-0.53	0.597
D6	-0.03975*	0.012175	-3.26	0.001
D7	0.01488	0.039701	0.37	0.708
D8	0.005173	0.059822	0.09	0.931
D9	0.021775	0.085758	0.25	0.8
D10	-0.02621	0.026992	-0.97	0.332
D11	-0.07997**	0.036627	-2.18	0.029
D12	-0.00391	0.008521	-0.46	0.646
D13	-0.01491	0.01213	-1.23	0.219
D14	-0.01971	0.010769	-1.83	0.067
D15	-0.00136	0.010962	-0.12	0.901
D16	-0.01111	0.025948	-0.43	0.669
D17	0.002898	0.036395	0.08	0.937
D18	0.015194	0.025275	0.6	0.548
D19	-0.02213	0.02568	-0.86	0.389
D20	-0.05429*	0.009313	-5.83	0
sigma	0.16527	0.002863		

Note: * and ** indicates 1% and 5% level of significance respectively.
Source: Author's calculation.

Table-16 reports that D7, D8, D9, D17, D18 have positive effects on efficiency, indicating that the firms i) purchase basic inputs from contractor or middleman (D7), ii) sale final product/ services to government (D8) and co-operatives/ marketing society (D9), iii) have contracts on equipments (D17) and raw materials (D18) have higher efficiency than others. It is also important to mention that positive effects of the abovementioned factors are not statistically significant. On the other hand, rest of the variables is negatively related with technical efficiency. Among them D2, D3, D4, D6, D11, D14 and D20 have significant negative effect on efficiency. This implies that the characteristics of the firms significantly adversely affecting on the efficiency are 1) location of the firms are within household premises, 2) nature of operation is perennial, 3) source agency for the purchase of basic inputs is government and private enterprise/individual/household, 4) Destination agency for sale of final products to contractor/middleman, 5) firms facing the problem of lack of market, 6) firms are large in size.

Table-17: Estimation results (Tobit model) of the determinants of informal sector in Orissa.

Efficiency	Coefficient	Standard Error	t-value	P-value
Constant	0.569409*	0.052744	10.8	0
D1	0.007589	0.019015	0.4	0.69
D2	-0.04543	0.039329	-1.16	0.248
D3	-0.03692*	0.008951	-4.12	0
D4	-0.04854	0.031111	-1.56	0.119
D5	-0.01322	0.061947	-0.21	0.831
D6	0.027908**	0.012269	2.27	0.023
D7	-0.08871	0.054429	-1.63	0.103
D8	0.078641	0.076879	1.02	0.306
D9	0.12721*	0.038909	3.27	0.001
D10	0.024332	0.030683	0.79	0.428
D11	0.109095**	0.046723	2.33	0.02
D12	0.020575**	0.008857	2.32	0.02
D13	-0.06678**	0.027226	-2.45	0.014
D14	-0.05684*	0.010522	-5.4	0
D15	0.008636	0.010077	0.86	0.391
D16	-0.02353	0.046027	-0.51	0.609
D17	0.021147	0.047532	0.44	0.656
D18	-0.05644	0.041651	-1.36	0.175
D19	0.012545	0.038923	0.32	0.747
D20	-0.14132*	0.010156	-13.91	0
Sigma	0.22282	0.002892		

Note: * and ** indicates 1% and 5% level of significance respectively.
Source: Author's calculation.

In Orissa, D1, D6, D8, D9, D10, D11, D12, D15, D17, D19 have positive effects on efficiency, indicating that the firms i) have proprietary ownership (D1), ii) purchase basic inputs from private enterprise/ individual/ household (D6), iii) sale final product/services to government (D8), co-operatives/ marketing society (D9), private enterprise/ individual/ household (D10) and contractor/ middleman (D11), iv) face problem of shortage of capital (D12) and v) competition from larger units (D15), vi) have contracts on equipments (D17), and vii) designed specified by contractors (D19) have higher technical efficiency than others. Among the above factors D6, D9, D11, D12 are statically significant and rest of the factors is not statistically significant. On the other hand, rest of the variables is negatively related with technical efficiency. Among them D3, D13, D14, D20 have significant negative effect on efficiency. This implies that the characteristics significantly adversely affecting on the efficiency are 1) nature of operation is perennial, 3) facing problem of lighting facilities/ power cut and lack of market, 6) firms are in large size.

9. Conclusions
Both the organized and unorganized sectors' NDP have increasing trends in absolute terms, but unorganized sector has higher share in total NDP during 1970-71 to 2005-06.

However, during this period there has been a decreasing trend in the percentage share of unorganized sector, still it has higher share (almost 60%) in total NDP.

In the pre-liberalization period, annual average growth rate of both organized and unorganized sectors have increasing trends. But the rate of increase of the organized sector is slightly higher than the unorganized sector. But in Phase-IV, both the sectors have decreasing trends in growth. This implies that just after trade liberalization both the sectors were unable to compete with foreign firms in the open economic framework. But in phase-V, organized sector has decreasing trend, while unorganized sector has increasing trend and both the trend curves are converging towards each other. Possible reason could include unorganized firms were able to increase their production due to low cost of production in this phase, but domestic organized firms were still unable to reduce their cost of production and also unable to made them competitive to the open economic framework. In the phase-VI, both unorganized sector and organized sectors are increasing at increasing rate. In this phase, significant amount of forward linkages taking place between the organized and unorganized sectors through sub-contracting i.e., the relation between the two sectors is complementary. As a result of that the expansion of organized firms helps to expand the unorganized firms as well. So both the curves have increasing trend in this phase.

From the disaggregation analysis it is observed that though the share of agriculture, forestry & logging and fishing sector is decreasing over time, still it has highest share in unorganized sector's NDP. Trade, hotels and restaurants sector has the highest share in non-agricultural unorganized sector's NDP. On the other hand, manufacturing and community, social and personal services sectors have the greater shares than others in organized sector's NDP.

The trend in construction sector's growth is same with the trend of whole unorganized sector's growth for the entire study period. Except last phase, community, social & personal services and manufacturing sectors contribute more to making the shape of the whole unorganized sector i.e., in the pre-sub-contracting period these two sectors contribute more to making the shape of trend in growth curve for the whole unorganized sector. Except phase-V, the trend in growth of agriculture, forestry & logging and fishing is same with the trends of whole unorganized sector's growth. In the sub-contracting period, electricity, gas and water supply sector has major contribution in making the shape for whole unorganized sector. In case of organized sector, it is observed that the trend in growth of manufacturing sector is same with the trend of whole organized sector's growth for the entire study periods. Except phase-III and IV, the trend in growth of construction sector is same with the trend of whole organized sector's growth. Except last phase, electricity, gas and water supply sector has the same trend with the organized sector for the entire period.

From the above analysis one may conclude that construction and manufacturing sectors contribute more in both organized and unorganized sectors in almost all the periods. But it is interesting that electricity, gas and water supply contributes in the organized sector in the pre-sub-contracting period, while in the post sub-contracting period this sub-sector

contributes to the unorganized sector. So sub-contraction may changes the forms of the sub-sector i.e., whether it will be organized or unorganized. To find out the reasons behind the above trends in growth of each sub-sector, one should look into the deeper analysis by focusing into the policy changes for each sub-sector separately during the five phases of Indian economy.

Decomposition analysis shows sub-sector-1 and 6 have the major contribution in the overall unorganized sector's growth, but sub-sector-1's contribution has been decreasing over time. In case of organized sector, sub-sectors-3, 8 and 9 have the major contribution in the overall sector's growth.

From the descriptive statistics of efficiency it is seen that the results of Delhi and Orissa contrast each other. In Delhi, empirical analysis supports that contracted firms are less efficient, while contracted firms are more efficient in Orissa. Result of Delhi is supporting the existing school of thought in economics literatures regarding the exploitation of the informal enterprises due to the contracts with the formal enterprises.

There are some common factors, such as, sale of final product to government and co-operative/ marketing society, and contracts on equipment have positive effect on efficiency in both the states. The possible reason could be the firms selling their product to government and co-operative / marketing society are getting higher price than others. It is also identified that some common factors that have significant negative effect on efficiency of both the states. These are 1) perennial nature of operation, 2) facing problem of lack of market, 3) large in size. First, the firms in small and medium sizes are more efficient than the large firms. Informal firms are using mainly labour intensive technique and don't require much technical skill. Large firms need to hire more labour. Hired labour will be less productive than family labour unless it is efficiently supervised or is given right incentives. A rational producer will always choose to give incentive that is too small in order to avoid having pay for it (Banerjee, 1999). So agency problem comes into picture to make the large firms less efficient. Secondly, the firms operating seasonal and casual basis are more efficient than perennial firms because perennial firms are used to produce their product both in the peak and lean seasons, while seasonal and casual firms produce their product only in the peak season when labour and raw materials are available in cheap and have high demand of their outputs. Thirdly, it is also evident that lack of market is one of the main reasons of inefficiency. It is important to mitigate the abovementioned problem through proper policy suggestions for informal sector's enterprises.

10. Some policy insights

First, it is observed that principal agent problem exists in informal sector. To solve this problem and make hired labour more productive, institutional intervention is required in terms of the implementation of certain rules and regulation regarding the incentives of the hired labourer. Secondly, lack of market is one of the main reasons of the informal firms' inefficiency. Market certainty will make the informal firms more efficient. So diversification of production (i.e., production of those commodities which have high demand both in national and international markets) may solve the problem. Promotion of

export opportunities may also help the informal enterprises to find their market. Thirdly, it is observed that perennial firms are less efficient than casual and seasonal firms because they are used to produce their product both in the peak and lean seasons. In the lean season, on the one hand demand for the product is very less and on the other hand inputs are relatively costly. Again some institutional intervention is required to make cheap and sufficient supply of inputs and generate demand for product of the informal enterprises in the lean season.

References

- Banerjee, A. V. (1999). "Land Reforms: Prospects and Strategies", Massachusetts Institute of Technology, Department of Economics working paper no. 99/24.
- Coelli, T., D. S. P. Rao and G. E. Battese (1998). "An Introduction to Efficiency and Productivity Analysis", Kluwer Academic Publishers, London.
- CUTS International (2003). "Competitiveness of Indian Informal Sector and Cottage Industries in the Era of Globalisation and Economic Liberalisation", Launch Meeting, 9-10 June, 2003. downloaded from the website http://www.cuts-international.org/cspac-gelis-workshop.htm#Launch_meet accessed on 29.07.09
- Division of National Income, Savings and Flow of Funds, RBI (1993). "Database of the Unorganised Sector", *The Journal of Income and Wealth*, 15(1), 9-29.
- Government of India (1980 to 2008). Central Statistical Organisation "National Accounts Statistics (1980 to 2008)", New Delhi.
- Government of India (September, 2008). National Commission for Enterprises in the Unorganized Sector, Task force Report, "Definitional and Statistical Issues".
- Government of India (Nov, 2007). National Commission for Enterprises in the Unorganised Sector, Reports on "Financing of Enterprises in the unorganized sector and creation of a National Fund for the Unorganized Sector".
- Government of India (May, 2001). National Sample Survey Organisation, 55th Round, Report No. 459 (55/2.0/2), "Informal Sector in India 1999-2000: Salient Features".
- Kabra, K. N. (Nov. – Dec., 2003). "The Unorganised Sector in India: Some Issues Bearing on the Search for alternatives", *Social Scientist*, 31(11/12), 23-46.
- Kannan, K. P., T.S. Papola (2007). "Workers in the Informal Sector: Initiatives by India's National Commission for Enterprises in the Unorganised Sector (NCEUS)", *International Labour Review*, 146(3-4), 321-329.
- Kulshreshtha, A. C. and G. Singh (1998). "Contribution of Unorganised Sector in the Indian Economy", *Manpower Journal*, 34(3), 45-67.
- Mukhopadhyay, J. K. (1993). "The Informal Sector in India: the Need for a Comprehensive data base", *The Journal of Income and Wealth*, 15(1), 50-56.
- Narayana, M. R. (2006). "Formal and Informal Enterprises: Concept, Definition, and Measurement Issues in India"; In: Guha-Khasnobis, Basudeb., Ravi Kanbur and Elinor Ostrom (Ed.), "Linking the Formal and Informal Economy", Oxford University Press, New York, 92-118.
- Natarajan, S., S. N. R. Rajesh (2007). "Technical Efficiency in the Informal Manufacturing Enterprises: Farm Level Evidence from the Indian State", MPRA Working Paper No. 7816.
- Rai, L. P. (1993). "Database of Unorganised Part of Service Sector", *The Journal of Income and Wealth*, 15(1), 31-39.

- Rajesh, R. S. N., M. Duraisamy (2007). "Economic Reforms, Efficiency Change and Productivity Growth: An Interstate Analysis of Indian Unorganised Manufacturing Sector, SSRN Paper.
- Rajesh, R.S. N., M. Duraisamy (2008). "Efficiency and Productivity in the Indian Unorganised Manufacturing Sector: Did reform matter?", International Review of Economics, 55(4), 373-399.
- Rani, U. and J. Unni (Oct. 9 - 15, 2004). "Unorganised and Organised Manufacturing in India: Potential for Employment Generating Growth", *Economic and Political Weekly*, 39(41), 4568-4580.
- Rao, K. G. K. S. (1993). "Database of the Unorganised Sector", *The Journal of Income and Wealth*, 15(1), 30-38.
- Rao, V. K. R. V. (1983). "India' National Income, 1950-1980: An Analysis of Econmic Growth and Change", Sage Publications, New Delhi.
- Ray, S. C. (2004). "Data Envelopment Analysis: Theory and Techniques for Economics and Operations Research", Cambridge University Press, Cambridge.
- Spant, R. (2003). "Why Net Domestic Product Should Replace Gross Domestic Product as a Measure of Economic" downloaded from the website Growthhttp://www.csls.ca/ipm/7/spant-e.pdf accessed on 30.10.08.
- Subrahmanya, M. H. B. (2002). "Unorganised Manufacturing Sector in India: The Decline and the Changing Structure", *Margin*, 34(4), 77-89.
- Tiwari, S.G. (1993). "On Database of the Unorganised secondary and tertiary sectors", *The Journal of Income and Wealth*, 15(1), 4-8.