Problems and Prospects of Unorganized Textile and Apparel Firms in India

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Abstract

This paper addresses the issues related to the problems and prospects of unorganized textile and apparel firms' performance. The NSSO data categorizes these firms as expanding, stagnant, or contracting. By applying multinomial regression separately to OAE and Establishment firms, various firm-specific parameters have been related in this analysis. The analysis reveals certain differences between these types of enterprises. Several challenges are observed to be hindering the expansion of firms in the Indian textile and apparel industry. Contractual issues with other firms are a significant barrier to growth. Additionally, problems such as raw material shortages, declining demand, and labor issues are causing firms to shrink. To mitigate these issues, firms attempt to diversify their activities. Additionally, government assistance is crucial in supporting these small firms.

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Keywords: Firms, OAE, Expanding, Contracting, NSSO.
JEL: D22, O17, C01

1.Introduction:

Textile industry occupies an important position in India in terms of the contribution regarding output, employment, and income of the people. According to Indian Brand Equity Foundation (*IBEF*), the Textile and Apparel Industry accounts for 13% of the country's industrial production. After agriculture this sector provides the largest employment opportunity, creating about 45 million jobs for the people. It absorbs both skilled and unskilled workers. Since India is country with large numbers of population this sector shows immense opportunity to the country. Many firms in the textile and apparel industry lie in the unorganized sector. The unorganized firms are basically small firms producing output using very little amount of resource. This sector employs around 45 million people (Dhanda, n.d.; *Employment in the Textile Industry*, 2021), which is about 90% of the total workforce in the textile and apparel industry. This sector provides livelihood opportunities for millions of rural and urban poor, especially women. The textile sector in India significantly contributes to employment generation (Dixit & Lal, 2019). Ranking as the third-largest exporter of textiles and apparel globally, this industry provides both direct and indirect employment, making it a crucial source of livelihood for millions, particularly women and rural inhabitants (Annual Report 2022-2023, n.d.). This extensive employment supports inclusive development. However, the industry faces numerous challenges, such as raw material shortages, outdated machinery, and power

shortages, which impact firm performance. Performance disparities are notable within the sector. Gupta (2017) identified significant differences in financial performance among firms. Despite these challenges, the sector has exhibited positive growth, aided by government initiatives like the establishment of Integrated Textile Parks, technology funds, and the allowance of 100 percent foreign direct investment (Nandhakumar & Rajarathinam, 2017). Nonetheless, Senthilkumar & Sengottaiyan (2016) reported that firms' operating profits are unsatisfactory due to uncontrolled growth. They found a positive correlation between firm size and profitability, suggesting that achieving optimal size could enhance profitability. Conversely, Sen (2017) observed that contract agreements have sometimes deteriorated firm performance. Though there exists substantial amount of literature about evaluating performance of the unorganized firms based on definitive inputs and outputs (Bairagya, 2013; Kathuria et al., 2013; Rajesh Raj, 2011; Sengupta & Seth, 2017), but it is necessary to evaluate the firm's performance from other perspectives also. The NSSO categorized the firms as – expanding, stagnant and contracting. Previously (Sengupta & Seth, 2021) analyzed the unorganized sector firms in general using the NSSO data. But here the specific field of textile and apparel sector is focus of concern. Such an analysis will bring out more information about the condition of firms in this sector.

2. Data Description:

The present paper utilizes the unit level data from NSSO 73rd round (July 2015 to June 2016) survey data on Unincorporated Non-Agricultural Enterprises (Excluding Construction) in India. From the All-India survey data the Textile and Apparel sector data has been selected for the present study. This section discusses some of the features of the data.

Table 1: Estimated number Firms in different sectors:

Sector	Number of Firms	Percent
Rural	40,10,555	51.72
Urban	37,43,772	48.28
Total	77,54,327	100

***Source**: Author's calculation from NSSO 73rd Round data*

From the above table it is clear that, there are about 7745326 firms (estimated) over the country. Among them 51.72 % are in the rural sector and 46.28 % are in the urban sector. It is also observed that some firms have operated for less than 3 years. Those firms which operated for less than three years during the survey period will be excluded from the present analysis.

Table 2: Status of the enterprises:

	Number of Firms (Estimated)	Percentage
Expanding	20,84,952	30.98
Stagnant	35,88,812	53.33
Contracting	10,55,566	15.69
Total	67,29,330	100

***Source**: Author's calculation from NSSO 73rd Round data*

From Table 2 one can see that about 30.98% of firms are expanding, 15.69% are contracting and 53.53% are stagnant. It can be observed that considering contracting and stagnant firms together about 2/3rd of the firms is of non-expanding type.

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Table 3: Percent of firms according to status in different sectors:

	Rural	Urban	Total
Expanding	46.07	53.93	100
Stagnant	53.72	46.28	100
Contracting	56.62	43.38	100
Total	51.81	48.19	100

***Source**: Author's calculation from NSSO 73rd Round data*

Most of the expanding firms are in the urban sector whereas most of the stagnant and contracting firms are in the rural sector (Table 3). Considering the constraints regarding demand and other infrastructural bottlenecks in the rural sector it is quite natural that the expansion capacity of these firms is limited in the rural sector.

Table 4: Sectoral composition of Ownership category.

Ownership Category	Rural	Urban	Total
Male	41.71%	43.75%	42.69%
Female	57.39%	54.92%	56.2%
Partnership with members of the same household	0.7%	0.92%	0.81%
Partnership between members not all from the same household	0.2%	0.4%	0.29%
Total	100%	100%	100%

***Source**: Author's calculation from NSSO 73rd Round data*

From Table 4 it can be seen that most of the firms are owned by female. In rural sector around 57.4% firms are owned by female and in the urban sector around 55% firms are owned by female. In total around 56 % of the firms are owned by female.

Table 5: Location of enterprises.

Location of the enterprise	Rural	Urban	Total
Within household premises	85.95%	75%	80.66%
Outside household premises: With fixed premises and with permanent structure	13.06%	24.08%	18.38%
Outside household premises: With fixed premises and but without any permanent structure /kiosk/stall	0.71%	0.74%	0.72%
Outside household premises: With fixed premises but without any structure	0.18%	0.08%	0.13%
Mobile market	0.04%	0.02%	0.03%
Without fixed premises (street vendors)	0.06%	0.08%	0.07%
Total	100%	100%	100%

***Source**: Author's calculation from NSSO 73rd Round data*

From Table 5 it can be seen that about 86% of the rural firms operated from within household premises whereas for urban firms this percentage becomes 75%. In total about 81 % of firms operate from within household premises. There are about 24% firms in urban sector which operate from Outside household premises but with fixed premises and with permanent structure and in rural sector there are about 13% of such firms.

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Table 6: Percentage of firms according to enterprise type.

	OAE	ESTA
Expanding	29.85	41.83
Stagnant	54.34	43.69
Contracting	15.81	14.48
Total	100	100

***Source**: Author's calculation from NSSO 73rd Round data*

NSSO classifies the firms into two categories- Own Account Enterprises (OAE) and Establishments (ESTA). According to NSSO those enterprises which are run without any hired worker employed on fairly regular basis is termed as Own Account Enterprises (OAE). On the other hand, an enterprise which employs at least one hired worker on a fairly regular basis is termed Establishment (ESTA). From Table 6 it can be seen that most of the stagnant firms are of OAE type. About 54,34% of OAE firms are stagnant. In the case of Establishment firms also most are stagnant (43.69%) but it is also observed that about 41.83% of these firms are also expanding. About 15.81 % of OAE firms are contracting and about 15.48 % of Establishment firms are contracting. So, in the case of contracting firms there is very little difference between the OAE and Establishment.

Table 7: Percentage of firms according to problem faced.

Nature of the problem faced	expanding	stagnant	contracting	Total
erratic power supply	21.77	8.25	3.79	9.3
shortage of raw mater	6.01	5.4	1.9	4.38
shrinkage /fall of demand	19.33	39.64	69.46	45.55
non-availability / high cost of credit	13.7	14.95	4.78	11.43
non-recovery of financial dues	17.52	10.91	5.01	10.22
non-availability of labour as and when needed	3.09	1.66	0.37	1.5
non-availability of skilled labour as and when needed	3.53	1.93	0.69	1.82
labour disputes and related problems	0.12	0.03	0.06	0.06
others	14.94	17.24	13.94	15.75
Total	100	100	100	100

***Source**: Author's calculation from NSSO 73rd Round data*

Table 7 gives a brief view of the nature of problems faced by firms. It shows that in general the most severe problem faced by firms is shrinkage /fall of demand. About 45.55% of instances problem fall of this category. The next severe problem is of others type (15.75%). Non-availability / high cost of credit appears 11.43% cases and 10.22% problems are of non-recovery of financial type. However, in case of expanding firms according to severity most important three problems are erratic power supply (21.77%), shrinkage /fall of demand (19.33%) and non-recovery of financial dues (17.52%). In the case of stagnant firms, the most severe problem is shrinkage /fall of demand (39.64%) followed by others (17.24%) and non-availability / high cost of credit (14.95%). Turning to contracting firms, it is seen that the most severe problem is shrinkage /fall of demand (69.46%).

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Table 8: Percentage of firms according to government assistance received.

Type of assistance received from the government	expanding	stagnant	contracting	Total
financial loan	14.13	18.31	64.7	18.07
subsidy	38.64	42.81	4.57	39.53
machinery	5.06	11.8	7.98	8.58
skill development	10.22	3.96	6.86	6.93
raw material	1.51	3.59	2.07	2.59
others	30.44	19.52	13.82	24.31
Total	100	100	100	100

***Source**: Author's calculation from NSSO 73rd Round data*

From Table 8 it is clear that in general the most important assistance comes in the form of subsidies. About 39.53% of assistance is received in the form of subsidy. Next important categories are others (24.31%) and financial loans (18.07%) respectively. In the case of expanding and stagnant firms the most important source of government assistance is subsidy (38.64% and 42.81% respectively) but is case of contracting firms the most important source of assistance is financial loans (64.7%).

3. Objective

It is observed that in the textile and apparel industry some firms are expanding, some are stagnant, and some others are contracting. There are some firms which have operated for less than three years. These are excluded from analysis as they are non-comparable. Now a natural question arises as to why the firms are divided into these expanding, stagnant and contracting categories. The present study is focused on examining the effects of different factors producing such behaviour of firms. This is done with the help of multinomial logit regression analysis.

4. Methodology

The method of Multinomial logistic regression analysis (Greene, 2012) is applicable in the case of more than two outcomes which are discrete. This analysis takes dependent variable to be categorical. The regression is conducted considering one categorical dependent variable and a bunch of independent variables. However, the independent variables may be either real-valued or categorical. The multinomial logistic regression model predicts probabilities of different possible outcomes for a set of independent variables. Let us now see the method in which this can be done.

Let a multinomial variable (Y_i) take different discrete values which may be indexed as 1,2,3,…..,J

Further, let $\phi_{ij} = \Pr\{Y_i = j\}$ (1)

stands for probability that the i^{th} response falls in the j^{th} category.

Assuming the response categories to be mutually exclusive and exhaustive we can write: $\sum_{j=1}^{J} \emptyset_{ij} = 1$ for each *i*, implying sum of the probabilities becomes unity for each individual. When dealing with grouped data, introducing an auxiliary random variable can be helpful. This variable represents the counts of responses in different categories.

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Let n_i be the number of cases in the i^{th} group and let Y_{ij} be the number of responses from the i th group that fall on the j th category, with observed values y_{ij}. For individual data n_i = 1 and Y_{ij} becomes an indicator (dummy) variable that takes the value 1 if the i^{th} response falls in the j^{th} category or 0 otherwise. Also $\sum_j Y_{ij}$= 1 as one and only one of the indicators Y_{ij} can be "on" in this case.

The probability distribution of the counts y_{ij} given the total n_i is given by the multinomial distribution,

$$Pr\{Y_{i1} = y_{i1}, \dots\dots, Y_{iJ} = y_{iJ}\} = \binom{n_i}{y_{i1}, y_{i2}, \dots\dots, y_{iJ}} \emptyset_{i1}^{y_{i1}}, \emptyset_{i2}^{y_{i2}}, \dots\dots, \emptyset_{iJ}^{y_{iJ}} \quad (2)$$

When dealing with multinomial data, a common approach is to select one of the response categories as the baseline or reference cell. Then the log-odds for all other categories can be calculated by comparing this baseline. Finally, the log-odds are expressed as a linear function of the predictors. For example, if we take the last category (J) as the baseline and calculate the odds that a number of group *i* falls in category *j* as opposed to the base line as $\emptyset_{i1}/\emptyset_{iJ}$.

In the context of the multinomial logit model, we make the assumption that the log-odds of each response category follow a linear model:

$$\theta_{ij} = log\frac{\emptyset_{ij}}{\emptyset_{iJ}} = A_j + x_i' B_j \quad (3)$$

Where, A_j is a constant and B_j is a vector of regression coefficients, for j= 1,2,..., J-1

This model resembles a logistic regression model, but it involves a multinomial probability distribution for the response instead of a binomial one, and it consists of j-1 equations instead of just one. The J-1 multinomial logit equations contrast each of the categories 1,2, …., J-1 with category J. But the single logistic regression equation is contrast between successes and failures. In case of J=2 the multinomial logistic regression model reduces to the usual logistic regression model.

5. Results and Discussion

The Multinomial Logit Regression has been run separately for OAE (Own Account Enterprises) and ESTA (Establishment) firms. This is done to consider the fact that these types of enterprises are based on different set up. We want to enquire about the factors which are responsible for the making the firms expanding or contributing as against stagnant. Thus, the dependent variable is the status of enterprise- whether it is expanding, stagnant or contracting. The independent variable are dummy variables. These are – if the firms are conducting mixed activities, if the firms have any kind of contract, if the firms are facing power shortage problem, if the firms are facing raw material shortage problem, if the firms are facing falling demand problem, if the firms are facing labour problem. These variables have been selected considering the nature of the firm's activities, including its diverse production processes and the challenges encountered in daily production operations. The variable nature of activity of the firm has been considered as it leaves an important impact on the working of the firm. A firm may not only conduct a single activity in the unorganized sector. It may conduct more than one activity for its survival and opportunity as may be available. These are considered mixed firms. Another

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factor is whether the firm has any type of contract or not. It is well known that1 where the merchants advance raw materials to the producers and collect their produce for sale. Moxam (2016) pointed out that in India, merchants of the British East India company provided the designs to the producers. These designs were according to the tastes of the British people. The producers worked in their home or in workshops. Leasing out of the work was also not very uncommon. Such a system continues to be common in the small-scale informal production sector of contemporary India. In many instances, the firms obtain raw materials through their contractual agreements. In other instances, they sell their entire output, whether finished or semi-finished, to merchants. This variable, therefore, represents the dependency of small firms on other firms. This variable, therefore, reflects the dependency of small firms on other firms. There is a debate about the profitability of such contracts. Some believe these contracts benefit producers by ensuring a steady supply of quality raw materials at a low cost and by stabilizing the market, relieving firms of demand issues. However, others argue that the putting-out system significantly constrains the firms' potential. It prevents them from operating efficiently and independently, even when opportunities arise (Sahu, 2010). The effects of contracting are more complex than those suggested by the differing perspectives (Basole et al., 2015). They are believed to favor lazy firms by invoking the problem of "Adverse Selection". We aim to test the extent to which this logic applies to the current NSSO data. The other set of variables are the problem variables, which directly oppose the firms' prospects. Evidence indicates that unorganized manufacturing units face significant limitations in accessing credit (Dutta & Dhar, 2021) . Others found that (Nichter & Goldmark, 2009) the most significant obstacles to the growth of the informal economy include power shortages, issues with labor and resource management, inadequate basic infrastructure, transportation costs, market barriers, competition from larger units, land issues, marketing challenges, and legal hurdles. We anticipate these variables to have a negative relationship with expanding firms and a positive relationship with contracting and stagnant firms. In the table below a list of variables is given.

Table 9: Description of variables

Variables	Description	Coded as	Data Type
Dependent Variable			
b2_q226	the status of enterprise- whether it is expanding, stagnant or contracting	1. Expanding 2. Stagnant 3. Contracting Base category is stagnant.	Categorical variable
Independent Variables			
mix_dum	Whether the firm conducted mixed activity	0. No 1. Yes	Dummy variable
probface_dum	Whether the firm faced any problem	0. No 1. Yes	Dummy variable
asstrecv_dum	Whether the firms received any assistance	0. No 1. Yes	Dummy variable
cotract_dum	Whether the firm have any contract	0. No 1. Yes	Dummy variable

[1] Existence of such a system in ancient India can be culled from various sources (Baishya, 1997)

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power_dum	Whether the firm faced any power shortage problem	0. No 1. Yes	Dummy variable
rawmat_dum	Whether the firm faced any raw material shortage problem	0. No 1. Yes	Dummy variable
ddfall_dum	Whether the firm faced falling demand problem	0. No 1. Yes	Dummy variable
labprob_dum	Whether the firm faced any labour related problem	0. No 1. Yes	Dummy variable
b2_q211	Enterprise type	1.OAE 2. ESTA	Dummy variable

As is noted earlier, stagnant is considered as the base for comparison. In multinomial exercises the regression is done in relation to the base. Care should be taken in the interpretation of the coefficients, keeping in mind this relativity. Thus, it is better to consider the odd-ratios (Table A1 – A3). The odd-ratios give the relative probabilities. First, let's examine the OAE firms (Table A1). For the mixed dummy variable, we find that firms using mixed operations have a 72% higher likelihood of expanding compared to other firms. However, there is also a 45% higher probability that these firms are contracting. Therefore, the results are inconclusive. The result is clear for problem faced dummy. There is a 20 % less chance (predicted probability is .80) in comparison to stagnant that the firm is expanding if problem faced. On the other hand, the chance is 175% (predicted probability is 2.75) that the firm is contracting if problem faced. This means that when a problem is faced there is a higher chance that it will be contracting. There is a lower chance that the firm will be contracting when assistance is received (odds-ratio is .38). However, in the case of expanding though the probability is high (1.04), the result is not significant. This means that assistance helps the firms to maintain the present status but may not be helpful for the firms to be expanding. When there is a contract there is a high chance that the firm is contracting. The predicted probability is .79 for expanding and 1.41 for contracting. This reflects the exploitation due to contracting. So, the OAE firms have not benefited from the contract. As regards the power shortage dummy, the problem did not impede the expansion of OAE firms (chances of expanding is high) but in case of contraction the result is not significant. Raw material problem dummy has the impact of higher probability of the OAE firm being contracting but in case of expanding the result is not significant. Thus, the raw material problem is causing the firms to shrink their activity.

For the other two problem variables (demand fall dummy and labour problem dummy) it is clear from the result that these problems really gave a high chance to the firms to be contracting rather than expanding. Now, turning to the Establishment firms (Table A2), we see that the results are similar. There is no unambiguous result for mixed dummy. Contracts have a negative role in the case of expansion of firms. Government assistance has a booster effect on firms. When the firms faced any kind of problem (problem faced dummy), the firms showed a high chance of contracting. Similar is the case of the variables – demand fall dummy and labour problem dummy. These variables have a negative impact on the firms' expansion.

6. Policy implications:

Regarding policy recommendations, it is evident that government assistance is essential in addressing the challenges faced by firms. The government should not only provide loans but also monitor and support small businesses. Emphasizing quality control, offering market access, developing small industrial clusters, and spreading knowledge through skill development could help firms overcome their issues. Although government action is already in place in many instances, it likely needs to be strengthened further.

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Conclusion:

This paper attempts to find out the certain characteristics of the unorganized textile and apparel sector with the help of the NSSO data. The paper initially aims to identify some of the key characteristics of the firms in this sector. The analysis reveals certain distinctions between Own Account Enterprises (OAE) and Establishments. Then it is attempted to correlate the conditions of these firms (expanding, contracting, or stagnant) with a set of subjective variables. It is inferred that these units are significantly hindered by numerous problems that greatly affect their prospects. To mitigate this negative impact, they attempt to diversify their activities, though these diversifications are not always successful. Additionally, subcontracting does not seem to be beneficial. However, government assistance appears to be very helpful for both the OAEs and establishments.

Appendix:

Table A1: Relative probability for OAE

(Odd ratios)

-> b2_q211 = OAE

Iteration 0: log likelihood = -18134.161
Iteration 1: log likelihood = -16891.681
Iteration 2: log likelihood = -16587.703
Iteration 3: log likelihood = -16584.696
Iteration 4: log likelihood = -16584.694
Iteration 5: log likelihood = -16584.694

Multinomial logistic regression Number of obs = 18,895
LR chi2(16) = 3098.93
Prob > chi2 = 0.0000
Log likelihood = -16584.694 Pseudo R2 = 0.0854

b2_q226	RRR	Std. Err.	z	P>|z|	[95% Conf. Interval]	
expanding						
mix_dum	1.726446	.1557694	6.05	0.000	1.446615	2.060408
probface_dum	.8033777	.0442076	-3.98	0.000	.7212412	.8948681
asstrecv_dum	1.040293	.169048	0.24	0.808	.756546	1.430462
cotract_dum	.7911008	.0496714	-3.73	0.000	.6994986	.8946986
power_dum	1.363486	.1320475	3.20	0.001	1.127757	1.648488
rawmat_dum	1.046519	.1854915	0.26	0.798	.7393925	1.481219
ddfall_dum	.4014538	.0304511	-12.03	0.000	.3459952	.4658016
labprob_dum	.5379385	.0546516	-6.10	0.000	.4408138	.6564626
cons	.6669325	.0134913	-20.02	0.000	.6410074	.6939061
stagnant	(base outcome)					
contracting						
mix_dum	1.458738	.1854203	2.97	0.003	1.137054	1.87143
probface_dum	2.74921	.2305814	12.06	0.000	2.33247	3.240408
asstrecv_dum	.3833656	.1166174	-3.15	0.002	.2111947	.6958943

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cotract_dum	1.409049	.1005348	4.81	0.000	1.225161	1.620536
power_dum	1.146378	.1564491	1.00	0.317	.8773289	1.497937
rawmat_dum	1.759898	.3488526	2.85	0.004	1.193327	2.595466
ddfall_dum	3.353157	.2658687	15.26	0.000	2.870536	3.916922
labprob_dum	1.845829	.1907277	5.93	0.000	1.507432	2.260192
_cons	.0788242	.0036053	-55.54	0.000	.0720654	.086217

Note: _cons estimates baseline relative risk for each outcome.
Source: Author's calculation from NSSO 73rd round data

Table A2: Relative probability for ESTA

(Odd Ratio)

-> b2_q211 = ESTA

Iteration 0: log likelihood = -7894.3897
Iteration 1: log likelihood = -7281.1989
Iteration 2: log likelihood = -7135.4557
Iteration 3: log likelihood = -7132.0519
Iteration 4: log likelihood = -7132.0455
Iteration 5: log likelihood = -7132.0455
Multinomial logistic regression Number of obs = 7,931
LR chi2(16) = 1524.69
Prob > chi2 = 0.0000
Log likelihood = -7132.0455 Pseudo R2 = 0.0966

b2_q226	RRR	Std. Err.	z	P>|z|	[95% Conf.	Interval]
expanding						
mix_dum	1.537634	.1923437	3.44	0.001	1.203304	1.964854
probface_dum	.7539066	.0490786	-4.34	0.000	.6635981	.856505
asstrecv_dum	1.478902	.2186201	2.65	0.008	1.106903	1.975918
cotract_dum	.7354242	.0494172	-4.57	0.000	.6446753	.8389475
power_dum	1.182274	.1180975	1.68	0.094	.9720563	1.437953
rawmat_dum	.8652132	.2097313	-0.60	0.550	.5380076	1.391419
ddfall_dum	.3287476	.0328858	-11.12	0.000	.2702178	.3999551
labprob_dum	.7234998	.1046261	-2.24	0.025	.5449357	.9605756
_cons	1.208982	.0412315	5.56	0.000	1.130812	1.292557
stagnant	(base outcome)					
contracting						
b2_q226	RRR	Std. Err.	z	P>|z|	[95% Conf.	Interval]
mix_dum	1.292131	.235253	1.41	0.159	.9043402	1.846211
probface_dum	3.049069	.3689246	9.21	0.000	2.405334	3.865085
asstrecv_dum	.2920974	.0922807	-3.90	0.000	.1572579	.542554
cotract_dum	1.782232	.1510728	6.82	0.000	1.509424	2.104347
power_dum	1.071414	.161488	0.46	0.647	.7973709	1.43964
rawmat_dum	1.36141	.4289145	0.98	0.327	.7342035	2.524419
ddfall_dum	3.360943	.3454264	11.79	0.000	2.747752	4.110975
labprob_dum	2.420408	.3778917	5.66	0.000	1.782349	3.286883
_cons	.0744404	.0066162	-29.23	0.000	.0625395	.088606

Note: _cons estimates baseline relative risk for each outcome.
Source: Author's calculation from NSSO 73rd round data

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