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Paper on
The Future of Retail Trade in West Bengal

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West Bengal today is witnessing a boom in corporate culture. The IT sector is growing like never before and, thus, today's youth have a jobs galore to chose from. These jobs are often very highly remunerative.

But, along with the high pay-packets come a heavy working schedule. Therefore, people working in this sector have *less time to spare*. Shopping from the conventional markets is therefore becoming more and more difficult. But, this section of people have *very high purchasing power*. So, they prefer those stores from where all items needed for daily consumption can be obtained, even if it means paying a bit more than the road-side vendors. Also, large scale retail stores provide people with a larger variety of choice that is seldom available with the small retailers. Thus, the large scale retail stores are very suitable for this population.

But, this section comprises only the urban population. The rural population has not as yet been a part of this boom. Therefore, they do not have such a huge purchasing power as their urban counterpart. And, so, they prefer buying from the small retailers and wholesalers as of yore.

This is where the main characteristic of the economy of West Bengal is detected and the aspect on which the future of retail trade in this State depends is identified.

What is Retail Trade :

Retail trade consists of activities directly related to the sale of goods to the ultimate consumers for personal and non-business consumption.

Large-scale retail, i.e., the organized retail sector can be classified into three types :

Departmental Store	*Multiple Shop*	*Super Bazaar*
These are large-scale retail shops where a large variety of goods are sold in a single building. The entire building in each shop is divided into a number of departments or counters. An example of this kind of retail store is Shoppers' Stop.	**These are retail stores running in various towns or cities having the same name and design, and dealing in the same type of products under a single brand name. Examples of this kind of retail stores are Bata, Titan etc.**	**These are large-scale consumers' cooperative stores which sell a wide variety of products under one roof. Example is : Big Bazaar.**

In India, the retail sector generates about 10% of the total GDP and provides employment to about 7% of the total work force.

Characteristic of Economy of the State :

The aspect on which the future of the retail trade in West Bengal depends is the *duality* of the economic structure of the society.

On one end of the spectrum is the *urban population* having an Average Monthly Per Capita Consumption Expenditure of more than Rs. 2,540/-. And, on the other hand is the *rural population* with an Average Monthly Per Capita Consumption Expenditure of only Rs. 559/-.

Thus, the two most common modes of operation seen in developed economies, viz.,

(1) *Vertical Separation*, which is the sale of goods via independent retailers, and
(2) *Vertical Integration*, which is the sale of goods directly by the producers by setting up of own retail chains,

are not observed in this State.

Presently, the retail scene in West Bengal is dominated by the small and medium retailers who form a whopping 98% of the total sector. The sector is the *unorganized sector*, composed of lakhs of vendors and mom-&-pop stores. There are many instances where the producers themselves sell the goods to the ultimate consumers for personal consumption. This may be interpreted as the vertical integration in the retail sector. Again, there are many retailers who operate via the wholesale market. This may be interpreted as the vertical separation in the retail sector. This sector caters mainly to the rural and semi-urban population who are mostly the *low-value, high-frequency* consumers.

The remaining 2% of the sector in West Bengal is composed of the large retailers. This sector is the *organized sector* in the retail market. This sector normally buys the goods directly from the producers and sells them to the ultimate consumers for personal consumption, without taking the help of middlemen. The sector operates out of malls and departmental stores and is meant mainly for the urban population, who are at the center of the ongoing corporate boom and who are, therefore, the *high-value, low-frequency* consumers.

However, as the corporate boom spreads further, the organized sector is also expected to grow in the State. It is *growing at the rate of 40% as shown by the Global Retail Development Index and will form 15 – 20% of the whole sector by 2010*.

This sector currently receives a turnover of Rs.15,75,000 crores and it is projected that by 2010, the organized sector will receive a turnover of Rs. 19,21,500 crores.

But as the organized sector expands, it is expected that the turnover received by the unorganized sector, which currently employs more than 90% of the total number employed in the retail sector, will fall. It is projected that the fixed asset held by them will fall to a value of Rs. 26,600, which will affect their turnover.

The Supply Chain :

As seen earlier, West Bengal is characterized by an economic dichotomy. One segment of the population follows the dominant unorganized sector while the other segment follows the organized sector which is slowly but steadily creating its foot hold in the market.

The unorganized sector in this State relies mainly on the wholesale market, i.e., the middlemen, and thus a supply chain is created.

The organised sector in West Bengal directly buys from the producer and so does not require the help of the wholesale market at all. So, this sector *collapses the conventional supply chain and sets up a supply chain of its own*.

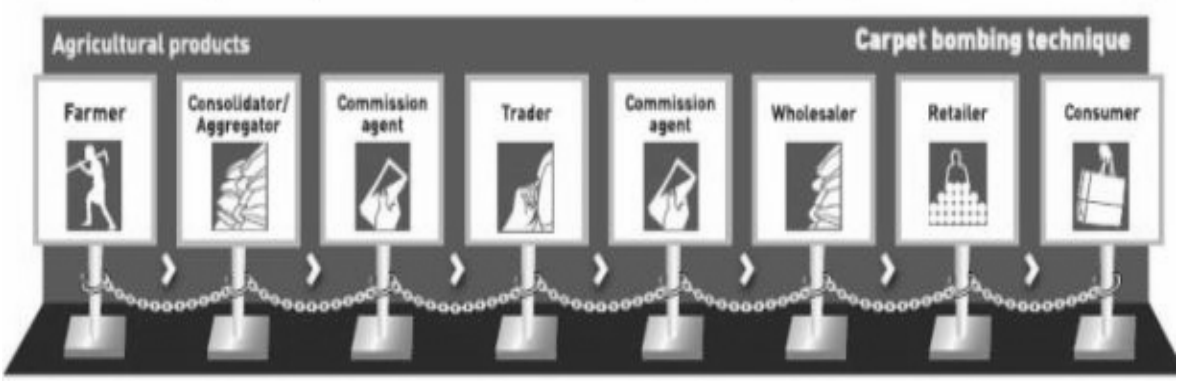
When the organized sector starts to flourish, the *agri-retailers* **might foray into** *contract farming* **where the retailers will enter into a contract with the farmers regarding the direct purchase of agricultural produce. Here, the farmers will benefit as there will be complete security that their produce will be bought. But, as contract farming has not been implemented in West Bengal, we are not discussing the details of this topic.**

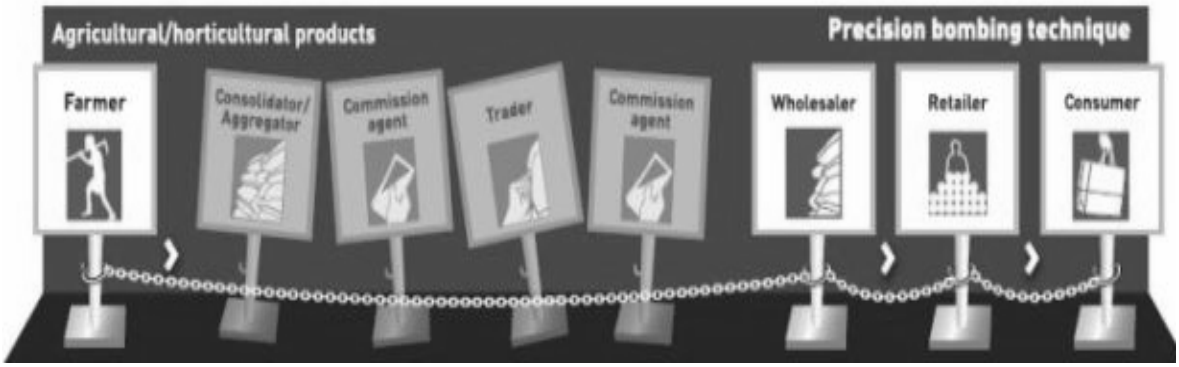
Before discussing the supply chain, let us discuss in brief the two technical terms associated with the supply chains of the unorganized and organized sectors :

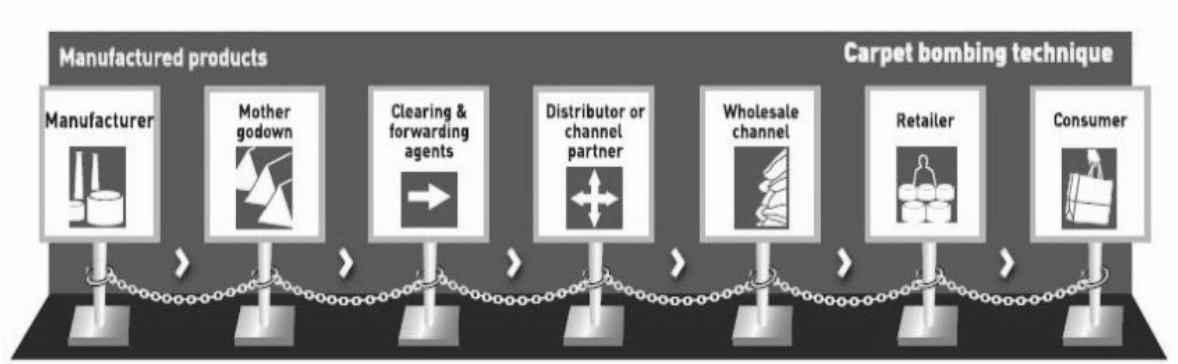
1. *Carpet Bombing Technique* **: This technique is used to supply goods by the unorganized sector to all consumers (both rural and urban) spread over a large geographical area.**

2. *Precision Bombing Technique* **: This technique is used by the organized sector by capturing the existing supply chain to supply goods to only the urban and semi-urban population.**

As the agricultural and manufacturing industries are the two major industries of West Bengal, their supply chains are being discussed here.







Therefore, it is clearly illustrated in the diagrams that if organized retail gains ground, the whole set of middlemen will be thrown out of work. This is the primary reason why they are agitating so violently against the launch of the large-scale retail companies so much so that

they have warned a bloodbath if the large companies, namely Reliance Fresh, do start off.

They, of course have, a point as the wholesale market does help to solve the problem of cyclical unemployment to a certain extent. The people, for example, farmers, who are rendered workless during a certain period of the year are absorbed by the wholesale market during that time.

But, these agitations are not proving to be very effective as the chaotic condition is proving to be quite an effective propaganda tool of the large retailers.

Foreign Direct Investment :

FDI, as it is referred to popularly, is a hot topic of discussion in our State. The State Govt. has strongly opposed FDI in retail trading and it seems unlikely to witness FDI in the near future in our State, we would prefer to restrict our discussions on the merits and demerits of FDI in retail trade.

The State Govt. is opposing entry of FDI for the following reasons :

1. **It is going to create massive unemployment by displacing the unorganized sector.**

2. **It will primarily cater to the needs of the urban population as the stores will be set up mainly in the urban areas. And, thus, the rural population will be completely ignored.**

But, an optimistic group gives a rosy picture of FDI in our State. They advocate FDI in retail trade in our State because :

1. **The food processing and the textiles industries will flourish because foreign companies are targeting these 2 industries due to the low cost of production associated with them.**

2. **In the long-run, employment will be generated.**

3. **There is the possibility of the GDP growing by 8 – 10% per year if FDI is introduced in our State.**

But, the Govt. has not opposed the entry of foreign companies completely. It has allowed Metro AG of Germany to operate in West Bengal as this company has not proposed to enter the organized retail sector. Only companies like Wal-Mart, who want to enter the organized sector have been refused entry. This is the reason why Wal-Mart is trying to join hands with Bharti Enterprises and, therefore, foray into the retail sector of West Bengal.

Let us try to illustrate everything we have discussed so far by the help of a model. (We are not including the effects of contract farming and FDI as they have not been implemented in our State as yet and possibly will take quite sometime to actually get implemented.)

THE MODEL

The apprehension which is in the air in our State is that, if the corporate giants are allowed to enter into retail business, the unorganized sector of our State will largely or totally be replaced by the organized sector. The fear about the future of the unorganized sector is causing all the commotion occurring in various places of the State today.

In our model, we have attempted to study the pros and cons of the problem, assuming that the entire unorganized sector is replaced by the organized sector in future in the State. The million dollar question is that what will happen to the lakhs of the unorganized retailers?

We have divided our study into :

a) **Case 1 : The present situation of the retail sector, and**
b) **Case 2 : The future of the retail sector in our State.**

In both the cases, we have *assumed that the market is perfectly competitive*.

CASE 1

Present dominance of unorganized sector :

There are four major areas of operation :

1. **Agricultural sector**
2. **Intermediary sector**
3. **Unorganised retail sector**
4. **Final consumer**

Agricultural Sector :

Assumption : There is no production cost. Thus the total value of its produce is counted as its profit.

The profit of agricultural sector :

$$\Pi_{AUR} = P_A Q_{UR}$$

where P_A = Price per unit of agricultural output produced,

Q_{UR} = Quantity of output produced.

Intermediary Sector :

Assumptions :

a) **This sector buys at a price of P_A and sells at a price of P_I.**
b) **The transport cost is zero.**

The markup pricing is $P_I = (1 + \alpha) P_A$, where α Profit Percentage.

Hence total profit, $\Pi_{IUR} = \alpha P_A.Q_{UR}$

Unorganized Retail Sector :

Assumption : This sector buys from the intermediary sector at a price P_I and sells at a price P_{UR}.

The total variable cost :

$TVC = P_I Q_{UR} + \beta Q^2_{UR}$, where $P_I > 0$ and β is a positive constant.

The total fixed cost :
$TFC = F_{UR}$, where $F_{UR} > 0$.

Therefore, total cost :
$TC = TVC + TFC$
$= P_I Q_{UR} + \beta Q^2_{UR} + F_{UR}$.

Total revenue :
$TR = P_{UR} Q_{UR}$

Hence, profit :
$\Pi_{UR} = TR – TC$
$= P_{UR} Q_{UR} - P_I Q_{UR} - \beta Q^2_{UR} - F_{UR}$

The objective of the sector is to maximize profit.

Thus, the first order condition requires that,
$\frac{\delta \Pi_{UR}}{\delta Q_{UR}} = 0$ (Q_{UR} is the only decision variable).

$\Rightarrow \frac{\delta}{\delta Q_{UR}} [P_{UR} Q_{UR} - P_I Q_{UR} - \beta Q^2_{UR} - F_{UR}] = 0$

$\Rightarrow P_{UR} - P_I - 2\beta Q_{UR} = 0.$

$\Rightarrow Q_{UR} = \frac{P_{UR} - P_I}{2\beta}$

If there are "n" number of retailers, then total output produced is :

$Q^{11}_{UR} = n\, Q_{UR}$

$= n. \frac{P_{UR} - P_I}{2\beta}$

Final consumers :

Assumptions :

a) **Consumer's demand function is :**
$P_{UR} = a - b\, Q^{11}_{UR}$, **where a = choke price and a, b > 0.**

b) **Supply function faced by the consumer is :**
$Q^{11}_{UR} = n. \frac{P_{UR} - P_I}{2\beta}$

We know that at equilibrium,

demand = supply,

$\Rightarrow \frac{a - P_{UR}}{b} = n. \frac{P_{UR} - P_I}{2\beta}$

$\Rightarrow 2a\beta - 2\beta P_{UR} = nbP_{UR} - nbP_I$

$\Rightarrow (nb + 2\beta)\, P_{UR} = 2a\beta + nbP_I$

$\Rightarrow P_{UR}^* = \frac{2a\beta + nb\, P_I}{nb + 2\beta}$

This is the equilibrium price.

Substituting P_{UR}^* in the demand function, we can get $Q^{11}_{UR}{}^*$ which is the total equilibrium output.

$P_{UR}^* = a - bQ^{11}_{UR}{}^*$

$\Rightarrow Q^{11}_{UR}{}^* = \frac{a - P_{UR}^*}{b}$

$= \frac{a - \frac{2a\beta + nb\, P_I}{nb + 2\beta}}{b}$

$$= \frac{anb + 2a\beta - 2a\beta - nbP_I}{b(nb + 2\beta)}$$

$$= \frac{n(a - P_I)}{nb + 2\beta}$$

CASE 2

Anticipated future dominance of organized sector :

Here, there are three major areas of operation :

1. **Agricultural sector**
2. **Organised sector**
3. **Final consumers**

Agricultural Sector :

Assumption : There is no production cost. Hence, total value of its produce is counted as its profit.

Profit of agricultural sector :
$\Pi_{AOR} = P_A Q_{OR}$

where P_A = Price per unit of agricultural output produced,

Q_{OR} = Quantity of output produced.

Organized Retail Sector :

Assumption : This sector buys from the agricultural sector at a price P_A and sells at a price P_{OR}.

The total variable cost :
$TVC = P_A Q_{OR} + \beta Q^2_{OR}$, where $P_I > 0$ and β is a positive constant.

Other than the cost of procuring the merchandise, the retailers incur other costs, viz., rent, wages, electricity, etc. are assumed to be the same as that of the unorganized sector. Thus, β is the same for both the sectors.

The total fixed cost :
$TFC = F_{OR}$, where $F_{OR} > 0$.

Therefore, total cost :
$TC = TVC + TFC$
$= P_A Q_{OR} + \beta Q^2_{OR} + F_{OR}$.

Total revenue :

$$TR = P_{OR}\, Q_{OR}$$

Hence, profit :

$$\Pi_{OR} = TR - TC$$
$$= P_{OR}\, Q_{OR} - P_I\, Q_{OR} - \beta\, Q^2_{OR} - F_{OR}$$

The objective of the sector is to maximize profit.

Thus, the first order condition requires that,

$$\frac{\delta\, \Pi_{OR}}{\delta\, Q_{OR}} = 0$$ (Q_{OR} is the only decision variable).

$$\Rightarrow \frac{\delta}{\delta Q_{OR}} [P_{OR}\, Q_{OR} - P_A\, Q_{OR} - \beta\, Q^2_{OR} - F_{OR}] = 0$$

$$\Rightarrow P_{OR} - P_A - 2\beta\, Q_{OR} = 0.$$

$$\Rightarrow Q_{OR} = \frac{P_{OR} - P_A}{2\beta}$$

If there are "m" number of retailers, then total output produced is :

$$Q^{11}_{OR} = m\, Q_{OR}$$
$$= m.\, \frac{P_{OR} - P_A}{2\beta}$$

Final consumers :

Assumptions :

a) Consumer's demand function is :
$P_{OR} = a - b\, Q^{11}_{OR}$, where a = choke price and a, b > 0.

b) Supply function faced by the consumer is :
$Q^{11}_{OR} = m.\, \frac{P_{OR} - P_A}{2\beta}$

We know that at equilibrium,

demand = supply,

$$\Rightarrow \frac{a - P_{OR}}{b} = m.\, \frac{P_{OR} - P_A}{2\beta}$$

$$\Rightarrow 2a\beta - 2\beta P_{OR} = mbP_{OR} - mbP_A$$

$$\Rightarrow (mb + 2\beta)\, P_{OR} = 2a\beta + mbP_A$$

$$\Rightarrow P^*_{OR} = \frac{2a\beta + mb\, P_A}{}$$

$$mb + 2\beta$$

This is the equilibrium price.

Substituting P_{OR}^* in the demand function, we can get $Q^{11}{}_{OR}^*$ which is the total equilibrium output.

$$P_{OR}^* = a - bQ^{11}{}_{OR}^*$$

$$\Rightarrow Q^{11}{}_{OR}^* = \frac{a - P_{OR}^*}{b}$$

$$= \frac{a - \frac{2a\beta + mb\,P_A}{mb + 2\beta}}{b}$$

$$= \frac{amb + 2a\beta - 2a\beta - mbP_A}{b(mb + 2\beta)}$$

$$= \frac{m(a - P_A)}{mb + 2\beta}$$

THE OBSERVATIONS

1. The organized retail sector will charge a lesser price than the unorganized sector iff (1/m – 1/n) < αb/ 2β (a-1).

$$P_{UR}^* - P_{OR}^* = \frac{2a\beta + nbP_I}{2\beta + nb} - \frac{2a\beta + mbP_A}{2\beta + mb}$$

$$= \frac{(2\beta+mb)(2a\beta+nbP_I) - (2\beta+nb)(2a\beta+mbP_A)}{(2\beta + nb)(2\beta + mb)}$$

$$= \frac{2ambβ+2βmbP_I+mnb^2P_I-2anbβ-2βmbP_A-mnb^2P_A}{(2\beta + nb)(2\beta + mb)}$$

$$= \frac{2abβ(m-n)+2bβ(nP_I-mP_A)+mnb^2(P_I-P_A)}{(2\beta + nb)(2\beta + mb)} > 0$$

[n>m, $P_I > P_A$, and so $nP_I > mP_I$]

For $P_{UR}^* > P_{OR}^*$, the necessary condition is :

$$P_A\,[2bβ\{(I+α)n-m\}+mnb^2α] > 2abβ(n-m)$$

The sufficient condition is :

$$2bβ\{n-m+αn\}+mnb^2α > 2abβ(n-m)$$

=> $2b\beta(n-m)+2ba\beta n+mnb^2\alpha > 2ab\beta(n-m)$

=> $2ba\beta n + mnb^2\alpha > 2ab\beta(n-m)(a-1)$

=> $2a\beta n + mnba > 2a\beta(n-m)(a-1)$

As $1> 2a\beta n > 0$, therefore, $\frac{2a\beta(n-m)(a-1)}{mnba} < 1$

=> $\frac{2a\beta(n-m)}{mnba} < \frac{1}{(a-1)}$

=> $(1/m - 1/n) < ab/ 2\beta (a-1)$

Analysis :

This result is very significant. It shows that if the number of organized retail outlets comes very close to the number of unorganized retail outlets, i.e., m is very close to n, and thus, (1/m – 1/n) is very close to zero, then the organized retail sector will definitely charge lower prices than the petty retailers. This is the competitive effect. But if m is much lower than n, then (1/m – 1/n) is very high and there is a high probability that the organized retail shops will charge a price higher than the petty retailers.

2. The organized retail sector will serve a smaller market than the unorganized sector iff $(1/m – 1/n) > ab/ 2\beta (a-1)$.

$$Q^{11}_{UR}{}^* - Q^{11}_{OR}{}^* = \frac{n(a-Pi)}{2\beta + nb} - \frac{m(a-P_A)}{2\beta + mb}$$

$$= \frac{(2\beta+mb)(na+nP_I) – (2\beta+nb)(ma+mP_A)}{(2\beta + nb)(2\beta + mb)}$$

$$=\frac{ambn+mnbP_I-2an\beta-2\beta nP_I-abmn+mnbP_A-2ma\beta+m\beta P_A}{(2\beta + nb)(2\beta + mb)}$$

$$=\frac{2ab\beta(m-n)+2mnb(P_I-P_A)+2\beta (nP_I-mP_A)}{(2\beta + nb)(2\beta + mb)} >0$$

[$P_I>P_A$, $n>m$, and so, $nP_I>mP_A$]

For $Q^{11}_{UR}{}^* > Q^{11}_{OR}{}^*$, the necessary condition is :

$P_A [mnba+2\beta n+2\beta na-2\beta m] < 2a\beta(n-m)$

The sufficient condition is :

$2a\beta n + mnba < 2\beta(n-m)(a-1)$ simplifying in the

same way as we have done in the previous observation.

As $1 > 2\alpha\beta n > 0$, therefore, $\frac{2a\beta(n-m)(a-1)}{mnb\alpha} > 1$

$\Rightarrow \frac{2a\beta(n-m)}{mnb\alpha} > \frac{1}{(a-1)}$

$\Rightarrow (1/m - 1/n) > \alpha b / 2\beta (a-1)$

Analysis :

When "m" remains smaller than "n", "1/m" remains higher than "1/n". Thus, from the above mathematical relationship, it can be inferred that, smaller the "m" value is, compared to "n", greater will be the value of (1/m – 1/n) and thus, smaller market will be catered by organized sector of retail business.

3. The consumers' surplus in the unorganized sector is more than in organized sector.

Consumers' surplus in the unorganized sector is :

$CS_{UR} = {}^1/_2 (a - P_{UR}^*) Q^{11}{}_{UR}^*$.

Substituting the equilibrium values of price and quantity, we get :
$CS_{UR} = \frac{n^2 b (a - P_l)^2}{2(2\beta + nb)^2}$

Consumer surplus in the organized sector is :
$CS_{OR} = {}^1/_2 (a - P_{OR}^*) Q^{11}{}_{OR}^*$.

Substituting the equilibrium values of price and quantity, we get :
$CS_{OR} = \frac{m^2 b (a - P_A)^2}{2(2\beta + mb)^2}$

$CS_{UR} - CS_{OR} = \frac{n^2 b (a - P_l)^2}{2(2\beta + nb)^2} - \frac{m^2 b (a - P_A)^2}{2(2\beta + mb)^2}$

Simplifying, we get :
$CS_{UR} - CS_{OR} = \frac{\{n(a-P_A)(mb+2\beta) - m(a-P_A)(nb+2\beta)\}}{2(2\beta + nb)^2(2\beta + mb)^2}$

For $CS_{UR} > CS_{OR}$, the sufficient condition is :
$\{n(a-P_A)(mb+2\beta) - m(a-P_A)(nb+2\beta)\} > 0$

($a > P_l, P_A$ and $m, n, b, \beta > 0$)

$\frac{n(mb+2\beta)}{a - P_A} \left[\frac{a - P_A}{\quad} \right] > 1$

$m(nb+2\beta) \quad a - P_I \quad a - P_A(1+\alpha)$

$\Rightarrow n(mb+2\beta) > m(nb+2\beta)$

$\Rightarrow n > m$

Analysis :

As the "n" is more than "m" in the State at present, it can be inferred that, in the present situation of West Bengal, consumers' surplus in the unorganised sector is more than that in organized sector.

4.The unorganized sector will have more profit than that in the organized sector iff $mn < (4\beta^2/b^2)$ ***and*** $(m/n) > \gamma$

Total profit in the unorganized sector is :

$$\Pi_{UR}^{I} = n\,\Pi_{UR}$$

$$= \frac{n\beta\,(a - P_I)^2}{(2\beta + nb)^2} - nF_{UR}$$

Total profit in the organized sector is :

$$\Pi_{OR}^{I} = m\,\Pi_{OR}$$

$$= \frac{m\beta\,(a - P_A)^2}{(2\beta + mb)^2} - mF_{OR}$$

If, $\Pi_{UR} - \Pi_{OR} >= 0$,

Then $$\frac{n\beta\,(a - P_I)^2}{(2\beta + nb)^2} - nF_{UR} - \frac{m\beta\,(a - P_A)^2}{(2\beta + mb)^2} + mF_{OR} >= 0$$

$$\Rightarrow \frac{n\beta\,(a - P_I)^2}{(2\beta + nb)^2} - \frac{m\beta\,(a - P_A)^2}{(2\beta + mb)^2} + (mF_{OR} - nF_{UR}) >= 0$$

Let us assume that $F_{UR} = \gamma F_{OR}$, **where** $0 < \gamma < 1$

Simplifying the above expression :

$$\beta\left(\frac{n\beta\,(a - P_I)^2}{(2\beta + nb)^2} - \frac{m\beta\,(a - P_A)^2}{(2\beta + mb)^2}\right) + (m - n\gamma)\,F_{OR} >= 0$$

Now, if, $m / n > \gamma$, **then sufficient condition is :**

$$\frac{n\beta\,(a - P_I)^2}{(2\beta + nb)^2} >= \frac{m\beta\,(a - P_A)^2}{(2\beta + mb)^2}$$

$$\Rightarrow \frac{n(2\beta + mb)^2}{m(2\beta + nb)^2} >= \frac{(a - P_A)^2}{(a - P_I)^2} > 1$$

[as $P_I = (1 + \alpha) P_A$, therefore, $P_I > P_A$. Thus $a - P_I < a - P_A$]

$$\frac{(2\beta + mb)^2}{(2\beta + nb)^2} > \frac{m}{n}$$

Simplifying we get,

$$4\beta^2 / b^2 > mn$$

Analysis :

It can, therefore, be said that profit gained by the unorganized sector is higher than the organized sector, if the above mathematical condition holds. Otherwise it becomes ambiguous.

5. Social welfare due to the unorganized sector will be more than the welfare due to the organized sector, only if certain conditions are fulfilled.

Welfare due to the unorganized sector is :

$$W_{UR} = \Pi_{AUR} + \Pi_{IUR} + \Pi_{UR} + CS_{UR.}$$
$$= P_A Q_{UR} + \alpha P_A Q_{UR} + \Pi_{UR} + CS_{UR}$$

The intermediary sector is absent in the organized stage. Therefore, welfare due to the organized sector is :

$$W_{OR} = \Pi_{AOR} + \Pi_{OR} + CS_{OR}$$
$$= P_A Q_{OR} + \Pi_{OR} + CS_{OR}$$

From Observation 2,

$Q_{UR}^* > Q_{OR}^*$ iff , $(1/m - 1/n) > \alpha b / 2\beta (a-1)$.

Therefore, $P_A Q_{UR}^* > P_A Q_{OR}^*$

Therefore, $\Pi_{AUR} > \Pi_{OUR}$ …… (1)

From Observation 3,

$CS_{UR} > CS_{OR}$ ……(2)

And from Observation 4,

$\Pi_{UR}^* > \Pi_{OR}^*$, iff $m / n > \gamma$ and $4\beta^2 / b^2 > mn$

……..(3)

Therefore, adding (1), (2) and (3), we get,

$\Pi_{AUR} + \Pi_{UR} + CS_{UR} > \Pi_{AOR} + \Pi_{OR} + CS_{OR}$

$\Rightarrow \Pi_{AUR} + \Pi_{IUR} + \Pi_{UR} + CS_{UR} > \Pi_{AOR} + \Pi_{OR} + CS_{OR}$

$\Rightarrow W_{UR} > W_{OR}$

Analysis :

Therefore, it has been proved mathematically that, $W_{UR} > W_{OR}$ iff conditions derived in Observations 2 and 4 are satisfied. Welfare of the society, as found mathematically, depends on the above predefined conditions, failing which the situation becomes ambiguous.

Epilogue :

In our model, detailed herein above, using restricted number of parameters, we have come to the inference that welfare of the society is dependant on the number of firms in unorganized and organized sectors. Lesser is the difference between number of firms in the two sectors, better is the probability of welfare to the State and its society.

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