ECONOMIC ANALYSIS OF VERTICAL AGREEMENTS

- The competition Act, 2002

June 21, 2011

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ACKNOWLEDGEMENT

I am thankful to Competition Commission of India for accepting me as an intern and providing me with the appropriate guidance and material to convert my synopsis into this paper.

I am fortunate to be provided with an opportunity to write my paper under the guidance of Sh. Sanjay Bahadur, Advisor (Economics). This paper would not have been possible without his valuable inputs, honest remarks and earnest effort to guide me throughout the drafting of the paper.

I am highly indebted to the entire library staff to help me find the relevant books and journals.

I am grateful to Dr Anil Kumar Sharma, Assistant Director (Economics), for guiding me in the organization of this project and enthusiastically helping me to steer the troubled waters in the time of need.

I would like to extend my sincere thanks to my friends and co-interns for their constant review and honest remarks.
ABSTRACT

Each production unit specialises in producing a particular kind of product(s). Integration of these specialised firms acts as a mean to achieve various ends. If a firm has to function and remain in business then it has to collude or/and vertically integrate to maximise its profit. This paper is an attempt to analyse economics behind a vertical agreement, as mentioned in The Competition Act, 2002. There is scope for vertical agreements to help obtain more efficient outcomes not only for producers and distributors but also for consumers and efficiency.

The paper is divided into 4 sections. Section I provides brief introduction; Section II and III explain why vertical agreements are subject to “rule of reason”; and in the final section, Section IV, author has suggested tools that can help to establish appreciable adverse effect on competition. In the end, a basic mathematics model is developed using each firm’s output (pre and post agreement) to depict various possible outcomes of vertical agreement.
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Preamble of The Competition Act, 2002 cites its objective in words of a recent judgment delivered by Honourable Supreme Court, as:

"The main objective of competition law is to promote economic efficiency using competition as one of the means of assisting the creation of market responsive to consumer preferences. The advantages of perfect competition are three-fold: allocative efficiency, which ensures the effective allocation of resources, productive efficiency, which ensures that costs of production are kept at a minimum and dynamic efficiency, which promotes innovative practices."

(Judgment in Civil Appeal No. 7999 of 2010 pronounced on 9th September, 2010)

The statement emphasises the importance of competition which ensures efficiency in allocation and distribution. Resources have opportunity cost (the cost of any activity measured in terms of the best alternative forgone) as they are scarce and have alternate use. Efficiency is when these resources are put to their best possible use i.e. have low opportunity cost. Competition Act intends to promote competition as a means to achieve efficiency. First welfare theorem guarantees that a competitive market will exhaust all of the gains from trade.

In economics, competition is referred to perfect competition. Infact any other form of market is studied and analysed vis-a-vis perfect competition. In perfect competition there are many firms and consumers. Every firm’s share in total output is miniscule and hence no firm in any way can influence market price or output. Any change in quantity supplied by a single firm does not lead to a change in prices because of homogeneity of goods. Also both buyers and sellers have perfect information and there are no barriers to entry and exit of firms. This implies that every firm earns normal profit or 0 economic profits in long run.

Perfect competition is an ideal definition of competition. But then ideal is what is exactly missing in world and is rather ruled by complexity of mixtures and adulteration. Every functional system intends to maximise/minimise its utility, profit/wealth or cost respectively, and is subject to constraints such as budgets, costs etc. In this- minimising the constraint exercise- there are chances of loss of efficiency in terms of allocation, production, distribution and consumption. It, in nutshell, implies loss of economic efficiency. Competition is believed to enhance efficiency. First welfare theorem says that equilibrium in a set of competitive markets is pareto efficient. However, in reality we have imperfect markets instead of perfectly competitive markets and hence, rational would be to consider effectiveness and degree of competition instead of competition per se.
Apart from competition we have monopoly, oligopoly as more prevalent market structures with varying degree of competition. In fact economic analysis of industries and their output determination is more complex than \textit{price is equal to marginal cost} rule. Effective competition and rivalry are terms to relax on the rigidity of the word “perfect competition” and instead focus on degree of competition. It is generally presumed that rivalry inflicts competition and hence, any attempt to lessen rivalry, by say merger or cartel formation is considered anti-competitive. However, this might not always be the case. It is not about rivalry but degree of rivalry that determines the effectiveness of competition.

It would be partial and irrational to judge any effort as anti-competitive if it eliminates rivalry. Rather markets require some integration and coordination in production chain for efficiency and specialisation. As Bork notes:

\begin{quote}
“No firm, no partnership, no corporation, no economic unit containing more than a single person could exist without the elimination of some kinds of rivalry between persons.”\footnote{Bork (1978)}
\end{quote}

We have observed and read about firms colluding amongst each other and acting as one firm of a product rather than competing with each other and reducing each other’s profit, most commonly known collusion is cartel- OPEC. Success of a cartel, in increasing producer surplus, is dependent on various factors e.g. elasticity of demand etc. These are generally categorised as horizontal agreements restraining competition and are declared by competition act as anti-competitive under per-se rule until such collusion enhances efficiency. However there are integrations observed within the production chain, where firms at different stages or levels of production integrate through various means, these are termed as vertical agreements.
Production chain, to influence market for a benefit, can be influenced either through price or output. Any “dealer” would want to maximise profit:

\[ \text{Max: } \Pi(q) = p(q)q - C(q) \]

It is a simple profit function, only taking into factor its own price and output. To maximise profit it can either maximise revenue by selling more, charging higher price i.e. targeting \( p(q)q \) components of profit function. If it cannot influence the market it sells in, then it will have to target its input market. Implies minimise cost, \( C(q) \). Thus, a firm anywhere in the production chain can achieve its objective of maximisation- either being a upstream party (seller) or a downstream party (buyer). As these parties are in different stages of production they can get into a vertical agreement.

Producers have vertical relationships with component or input suppliers in increasingly complex supply chains. Most producers also use a specialised distributor often with specialised intermediaries (eg wholesale) to reach their final consumers. These vertical and distribution relationships are needed both:
- to distribute efficiently since producers do not always have the necessary skills or knowledge of distribution and specialised distributors can often gain economies of scale and scope by distributing several/many products simultaneously, and

- to penetrate new markets since a relationship with a local distributor with specialist knowledge of the markets in which the product is to be launched can increase the chance of success and reduce risks

Wholesalers buy primarily from manufacturers and sell mostly to retailers, industrial users, and other wholesalers. Wholesalers perform many value added functions, including selling and promoting, buying and assortment building, bulk-breaking, warehousing, transporting, financing, risk bearing, supplying market information, and providing management services. Generally, wholesalers are only used by manufacturers or purchasers where they are more efficient at performing one or more of these value added functions.

Retailing is the final link in the distribution chain between the customer and the product manufacturer for the majority of consumer goods. It is a dynamic and complex sector involving a range of company types of varying scale. Even so very few manufacturers have their own retail outlets. They leave this to specialist retailers because of either their economies of scale and scope, or their local knowledge and capital. In its simplest form, retailing is the activity which makes goods and services available for purchase and consumption by consumers.

The role of retailers in the distribution chain varies according to the characteristics of the products and service concerned and the type and nature of business relationships with others involved in the chain. Increasingly, retail activity now "adds value" to products and services and enhances them in the eyes of consumers. More and more food retail chains offer a wide range of products under their own private labels. Some retail chains are also trying to create a brand out of their outlets. This trend is motivated by decreased transport lead-times and improved information technology.

An agreement among these parties with any intention and effect on market is subjected to debate. Agreements between two firms at the same level of production are often anti-competitive for a mere reason (most of the times!) that their products are substitutes i.e. satisfaction derived from either of the products is same. Vertical agreements are subject to “rule of reason” unlike the case in horizontal agreements where AAEC is presumed. In the next section we will study the five vertical agreements mentioned in The Competition Act, 2002.

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2 The Competition Act, 2002, section 3(3)
SECTION II

Every party in production chain specialises in its assignment in the chain. One player cannot perform the role of input supplier, producer and distributor and even if it does and can, then there is a “Poisson probability” that it will exploit returns to scale and factor in all areas. Co-ordination between producers and distributors formalised through vertical agreements can help firms to increase their profits and under certain circumstances, those efficiency gains may or may not be passed on to consumers. This exercise might require a commitment in terms of say time, quality of service, exclusivity etc to minimise for example transportation cost, administration cost or to establish goodwill.

Given such a general background there is scope for vertical agreements to help obtain more efficient outcomes not only for producers and distributors but also for consumers and efficiency. Vertical integration, may include activities such as wholesale functions, the development of private label products, and brand advertising. Firms will generally desire to restrict competition to raise profits while in contrast society may prefer more intense competition. The problem for the policy-maker lies in determining the net effect of prohibiting a restraint, given that (at the very least, due to fixed costs) imperfect competition may still remain. We first examine the relationship between the state of play of integration given by The Competition Act, 2002 i.e. –

I. Tie-in arrangement
II. Exclusive supply agreement
III. Exclusive distribution agreement
IV. Refusal to deal
V. Resale price maintenance
2.1 TIE-IN ARRANGEMENT

A tie-in provision requires the downstream party to buy one or more goods or intermediate inputs from the upstream party in addition to the inputs essential to maintaining his identity as part of the product network, thereby “tying” together the purchases. ³

"Tie-in arrangement includes any agreement requiring a purchaser of goods, as a condition of such purchase, to purchase some other goods."

An agreement arranged such that the downstream party is required to purchase a product in addition to the product it intends to buy. This unintentional purchase becomes an obligation to downstream party because of upstream party’s “action” (arrangement with external party) like an externality. A purchaser may find it suitable and in his interest when purchase of tied in product complements his line of operation.

A product requires not just one input and for each input it may have a different supplier even when one supplier might be capable of providing for most of the inputs. A supplier might want to sell an input apart from the input that downstream party demands from it. For example, in case of a computer, a hard disk drive tied in with a processor. This implies any purchaser maximising his utility will have one component of his budget constraint as given and thus will have to minimise his expenditure w.r.t other goods. Such an agreement drives out an opportunity to compete on part of other input supplier, it creates a barrier to enter in the market of tied-in good may be because a new entrant’s scale of operation in presence of such an agreement might not be cost effective. There are possible valid reasons for a tie-in.

There are instances where downstream party’s sales or quality of service are costly to verify, the upstream party may want to use a tie-in to require use of an input that can serve as an indicator of sales or will help ensure some aspect of quality. For example, a tie-in that requires use of packaging materials which is supplied by the upstream party.

Tie-in arrangements tie a product as a condition to purchase of a product. Such an arrangement might be impulsive on part of downstream party. As it enforces them with a product that the party may not be interested in “consuming” with a product they intend to buy. It leaves them with a very limited choice and a trade-off.

There is a case where tie-in arrangement can be anti-competitive in the external party’s market. Apart from its own market the tied-in product enters and tries to capture market share through some other production chain. This may increase the firm’s market share.

³ Report on Competition Policy and Vertical Restraints: Franchising Agreements prepared by the OECD Secretariat
2.2 EXCLUSIVE SUPPLY AGREEMENT

Exclusive supply agreement prohibits downstream party from dealing in products other than that of upstream party. Competition act states:

"exclusive supply agreement" includes any agreement restricting in any manner the purchaser in the course of his trade from acquiring or otherwise dealing in any goods other than those of the seller or any other person;

It is a restriction imposed by upstream party on downstream party. So upstream party trading is open, in the sense it can deal with any other downstream party but downstream party has a closed group. Both parties enter in this agreement only when it is mutually beneficial. To begin with let us consider why upstream party, say manufacturer, would want to get into an exclusive supply agreement.

In case there is competition in the market any upstream party would want to ensure a safe shelf for its product or a particular kind of service, say advertising as technique of promotion. Exclusive supply agreement requires the downstream party to ensure him, of that market or service, in return of some benefits. Say a product requires huge fixed cost and has a competitive market. Manufacturer, then, requires exclusivity of space so that comparison is not possible under the same roof at least. For eg- in case of cars, every car manufacturer prefers an exclusive showroom to itself even though another car's showroom might exist right beside its showroom.

Besides marketing as a main factor for increasing sales, retail management focuses on managing cost structures. For that reason great emphasis is placed upon maximising buying power benefits through scale and efficiency. Scale is related to the volume of products sold within a product range, sales growth via internal development, acquisition or collaboration. The breadth of product ranges and number of brands stocked also influences power as sales volume is concentrated or dispersed over the lines or brands. Efficiencies in decision-making, and centralisation or the coordination of purchasing also provide for greater buying power. From a competition policy perspective it is important to recognise that these efficiencies may be lost where a retailer engages in parallel trade or other sources outside its normal supply chain.

Vertical restraints might also be used to allow the manufacturer to capture economies of scale. A manufacturer might want to avoid supplying many outlets with a small amount of stock and would instead prefer to supply only a few outlets with more stock each. A vertical restraint such as quantity forcing requirement can solve this problem. It may be anti-competitive if the result is that so few retailers are supplied that intra-brand competition is significantly reduced in a market where intra-brand competition is weak.

From the point of view of downstream party such exclusivity in an agreement assures an uninterrupted supply of the product from upstream party for at least the specified
time in the contract. At times the product dealt with is branded or precious that exclusivity of supply would be in interest of the retailer and to establish the brand under his name. If competition exists in retail market then exclusive supply agreement with a upstream party would be beneficial to buyer. Exclusive dealing (where the retailer is prohibited from stocking competing products) may be seen to facilitate manufacturer investment in distribution activity, but will tend to raise manufacturer margins.  

However such an agreement is questionable when upstream party by exclusively dealing with a downstream player intends, by such an agreement, to limit the reach of his competitors in the market. This scenario is especially possible when there exists competition in upstream market and not in downstream market.

Another possible case can be where a manufacturer requires a particular kind of input which has limited supply or when manufacturer states his preferences and orders for a specialised input, say machinery, to be produced exclusively for him. In this case manufacturer can limit the reach of the input to himself by signing an exclusive distribution agreement. Producer of such an input due to the presence of an exclusive agreement can charge the manufacturer over and above his marginal cost by also guessing his reservation price.

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4 Vertical Restraints and Competition Policy by Paul W Dobson University of Nottingham and Michael Waterson University of Warwick
2.3 EXCLUSIVE DISTRIBUTION AGREEMENT

Exclusive distribution agreement is an arrangement in which a company grants exclusive rights on its products or services to another company. The most common forms include single branding and/or exclusive territory rights, whereby a single distributor obtains the right to market a supplier’s product in a specific territory. The supplier's purpose in granting exclusivity is normally to provide the distributor with incentives to promote the product and provide better service to customers. In most cases, the distributor’s market power is limited by inter-brand competition.

The main feature of such agreements is that the manufacturer or supplier agrees to supply certain goods for resale to only one party, the exclusive distributor within a defined territory and no other party will be supplied with the goods within that area by the supplier. Competition act quotes:

“exclusive distribution agreement” includes any agreement to limit, restrict or withhold the output or supply of any goods or allocate any area or market for the disposal or sale of the goods.”

Exclusive distribution agreement grants, downstream party, exclusive rights. This right is granted by an upstream party who picks from the set of downstream party, a subset with whom it intends to deal with to bank upon their specialised knowledge and may be to exploit economies of scope. This agreement is like an open interval (w.r.t dealing) for downstream party and a closed interval for upstream party i.e. this agreement places an obligation on part of an upstream party to deal with a particular set of downstream players but no such obligation exists for downstream party. Exclusive distribution agreement also includes “withhold the output or supply”. This is a scenario which is after production. So a producer produces output feasible on his efficiency scale but is restricted by the agreement on how much it can supply in its market. Implies firm is required to not sell a portion of the produce and maintain as inventory.

Say a manufacturer produces a new product in the same product line and for its investment to break through it requires a certain minimum sales number. It can then approach a retailer, who the manufacturer may or may not have dealt with in past, who according to the manufacturer has market presence and can assure the reach of his products to the targeted group. Or a manufacturer’s product require a certain kind of service, this may take the form of after-sales services such as guarantees or maintenance or pre-sales services such as information or technical assistance to potential buyers then it would be in manufacturers benefit to get into an exclusive distribution agreement and chose his retailer. This is so because there is a possibility of free riding which leads to non-alignment of incentive to provide for these services.
A manufacturer might suffer if there is damaging competition among retailers. Retailers, inorder to extract market share or increase their sales will undercut each other's price which might be detrimental to manufacturer's profit margin. Also when input substitution arises i.e. where the product supplied by the upstream firm is one of a number of inputs used by the downstream firm and if substitution between inputs is possible, the downstream firm may substitute lower quality inputs for those of the upstream supplier, e.g. a fast food franchisee may use lower quality inputs thereby adversely affecting the image of the entire franchise network. To a upstream party its goodwill and brand value is very important and to resolve any possibility of input substitution it would be in its interest to sign an exclusive distribution agreement with a downstream party which has no reputation of “piracy”.

Third point emphasised in the section 3(4) of The Competition Act, 2002, is to “allocate any area or market for the disposal or sale of the goods” i.e. geographical distribution of goods. This can be evident more in the case of distribution of goods. An upstream party, assuming it has monopoly, would want to extract maximum producer surplus. Hence, it would want to exercise third degree price discrimination- practice of dividing consumers into two or more groups with separate demand curves and charging different prices to each group. This division of consumers can be done by dividing the market w.r.t its geography.

Theory says in case of third degree price discriminations firm decision about what price to charge is based on:

\[ MR_i = MC \]

Where, i is number of groups divided by that firm.

Firm will produce where marginal revenue of i markets is equal to its marginal cost. This is so because say marginal revenue of one market exceeds marginal revenue of some other market then form would benefit by shifting output from lower MR segment to higher MR segment. Now if say MR is equal in all its market and exceeds its marginal cost of production, then firm could then make a greater profit by increasing its total output. It would lower its prices to both groups of consumers, so that marginal revenues of each group would fall and would approach marginal cost (which would increase as total output increased).
In case of two groups: $MR_1 = MR_2 = MC$

For example: A manufacturer will segregate the distributor of his product geographically, i.e. according to their area of market.

Whilst a distributor may be allocated an exclusive territory in order better to penetrate the market and make distribution more efficient and may be forbidden to sell or promote directly in the territory of other exclusive distributors, this protection must not be absolute. The possibility of some alternative sources of supply must always exist. Although exclusive distributors may be forbidden from actively promoting the product outside their allocated exclusive territory, they must be free to respond to orders coming from outside that territory (passive sales). Customers must be free to purchase from any distributor they wish, even outside their territory of residence, and make or arrange for personal imports. Intermediaries and other traders must be able to buy from any distributor and sell in any other market, particular in response to significant price differences.
2.4 REFUSAL TO DEAL

Refusal to deal “includes any agreement which restricts, or is likely to restrict, by any method the persons or classes of persons to whom goods are sold or from whom goods are bought.” Restriction is on both downstream and upstream parties.

Agreements between two or more competitors to refuse to deal, or limit dealings with another supplier or particular customer, or a class of competitor or customer, are known as primary boycotts. It might be collaboration against a party in different stage of production, may be when it declines to comply with the conditions to deal, set and solely decided by the boycotting group. Or perhaps on the ground that that party is accused of unethical way of conducting business. So the firm is substantially affected in its business or is precluded from carrying on business due to its inability to obtain adequate supplies of a product anywhere in a market on usual trade terms.

A less rigid and it seemingly not illegal case is where a manufacturer may regard a particular distributor as unsuitable (e.g. one who does not provide an adequate after-sales service) and refuse to supply its own products. But it cannot seek agreement from other manufacturers to cut off supplies to the distributor. It is an independent decision of the manufacturer which is based (may be) on legitimate reason.

A party in production chain, by making its sales subject to a condition can be alleged with refusal to deal. For example, a bottle maker declares that he will sell a minimum of 10,000 bottles each. So any aerated drink manufacturer who intends to deal with this particular bottle manufacturer will have to buy a minimum of 10,000 bottles. A big manufacturer may not have problems in affording this number of bottles but a refusal to deal cases arises on part of a small firm. The small firm can purchase, say, 6,000 bottles and a number more than this figure is beyond his budget. A bottlemakers’ intention can be to grasp hold of the downstream market by imposing “a least minimum” units to be purchased. In effect it is refusing to deal with small firms who are ready to market price of the bottles but can’t afford 10,000 bottles at that price.
2.5 RESALE PRICE MAINTENANCE

At first resale price maintenance might seem anti-competitive as a manufacturer defines price for the retailer. For eg- Manufacturer sells his product for Rs. 100 and obliges the retailer to sell it for less than Rs. 100. As per our Competition law "resale price maintenance includes any agreement to sell goods on condition that the prices to be charged on the resale by the purchaser shall be the prices stipulated by the seller unless it is clearly stated that prices lower than those prices may be charged." Such an agreement is resale price maintenance. But there are arguments that suggest that resale price maintenance may not be anti-competitive. First, if manufacturer was in a position to use its dominant power then it would much rather use it through wholesale prices instead of going into resale price maintenance agreement.

In addition, the manufacturer will mark up his wholesale price on his marginal cost and the retailer will mark up the retail price on his input price (i.e. wholesale price). The result is that the retail price is marked up over marginal cost twice, leading to a higher price, and lower output, for the manufacturer's product. This is a problem of double marginalisation. In this situation vertical restraint imposed by manufacturer on the retailer stops the retailer from marking up over marginal cost could increase not only manufacturer's profits but also consumer welfare.

Second, a product or service might require brand specific promotion by the retailer. Such a promotional activity involves cost on retailer. For eg- in case of electronic, retailer at times requires to conduct a demonstration to aware the potential customers of its services which might be new. Benefits from provision of such services, to retailers is non-excludable i.e. benefits accruing to provider and non-provider of brand promotional services is same. Implies there is a payment which non-provider (retailer) must make to the provider because the later accrues a positive externality on the former.

In presence of non-excludability there are very many chances of free riding. So any retailer has a less incentive to provide point-of-sale service which is not in manufacturer's interest. A possibility is that manufacturer provides compensation to retailer for providing the services in form of protected retail margin which is enough to cover the cost of retailer of supplying the increased point-of-sale promotion and wider retail distribution desired by the manufacturer.

However, this is not a fool proof way to ensure promotional activities by retailers. There is a possibility that retailer might undercut this margin and in such a case he is not free-riding on those services offered by other retailers. The price discounting retailer rather reduces the sales of other retailers and also the manufacturer compensation received by other retailers. As a consequence of which other retailers reduce their promotional efforts and a drop in distribution of manufacturer's product. Possibility of a loss in sales

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5 The Economics of EC competition law by Bishop and Walker
due to a reduction in effective retail distribution has made resale price maintenance a common motivation to deal with inherent retailer incentive problem.

This will ensure that retailers investment receive a just return through as resale price maintenance internalises the negative externality when consumers can use the services where they are offered (before sale information or demonstration), and buy where the price is the lowest, and if the services are costly. It is also the most efficient way of expanding manufacturer's market share and at the same time ensuring the performance of retailer's performance in providing valuable service. Because apart from enforcing resale price maintenance, manufacturers also must monitor and enforce retailer performance with regard to the provision of desired retail services. A manufacturer accomplishes this by providing retailers with expectations regarding performance, compensating retailers for this desired performance, and terminating those retailers that do not perform as expected. In this way the manufacturer" self-enforces“ its distribution arrangement with retailers.

Resale price maintenance may help to eliminate intra- and interbrand competition: if producers control gross prices, they can both choose high final prices and low gross prices; when producers make 0 margin through gross prices, the whole profit is made by retailers, and producers can make profit by fixed fees; controlling final prices help maximising the profit of the vertical structure “discounting retailers can free-ride on retailers who furnish services and then capture some of the increased demand those services generate.” 6Under resale price maintenance, producers cannot benefit from price adjustments, but this makes prices more uniform: facilitates detection of deviation with regard to a collusive price7

However, resale price maintenance may not be applicable where the free-rideable services provided by a full-service retailer involve product “quality certification". According to this theory the type of free-riding that is prevented by resale price maintenance involves consumers who “decide to buy the product because they see it in a retail establishment that has a reputation for selling high-quality merchandise.” For example, a reputable department store that stocks and displays a product is claimed to be certifying quality and thereby increasing overall demand for the product in the marketplace, which discount retailers then free-ride upon. This quality certification formulation of free-riding, however, does not explain most examples of resale price maintenance. Most cases of resale price maintenance involve products that already have well-established brand names, so that “quality certification” by a reputable retailer is not especially important. Moreover, firms that employ resale price maintenance terminate retailers that discount even if the discounting retailer is a reputable seller of high quality merchandise.

7 Jullien &Rey, 2007  
The attempt by defendants to place all cases of resale price maintenance within the prevention of free-riding framework has led to absurd, clearly pretextual explanations. For example, the economists retained by Levis Strauss justified the use of resale price maintenance by arguing that full-service retailers provided dressing rooms that consumers could use to determine their preferred style and size of jeans, and that consumers could then use this information to buy Levis jeans at discount stores that did not provide dressing rooms. However, were there any discount stores that sold jeans without dressing rooms? In fact, many cases of resale price maintenance involve manufacturer attempts to prevent retailer price discounting even when discount retailers provide similar point-of-sale retailing services as non-discount retailers. Discount retailers are terminated in these cases not for failing to supply sufficient services, but solely because they are selling below suggested prices.\(^9\)

Hence, resale price maintenance becomes a case-by-case issue. Though it checks for free riding on quality service and point-of-sale service providers, it can deter entrance of new retailers in the market. This can be in the case of products where established goodwill of incumbent retailers and fixed costs (to establish itself, example) are high. Another con cited is that retailers may observe demand shocks that producers don’t and in absence of resale price maintenance; retailers adjust their prices to these shocks. However, if they have a price ceiling or price floor binding them such an adjustment can’t happen. Hence, there is a trade-off between flexibility and collusion.

\(^9\) *Competitive resale price maintenance in absence of free-riding by Benjamin Klein*
SECTION III

Non-price and price vertical agreements may either promote or reduce economic efficiency, and consequentially be either pro-competitive or anticompetitive. Consequently, a competition policy that makes a particular vertical agreement either always acceptable or always unacceptable will not match the treatment of that vertical agreement to its effect on economic efficiency in all circumstances. Competition policy should consider market structure in determining when a vertical restraint is acceptable. Vertical agreements are very unlikely to harm economic efficiency or reduce competition in a properly defined market when its structure — its level of concentration, conditions of entry, and dynamics — insure that the franchise will face vigorous competition from other franchise systems or from products or services distributed in other ways.

Basic understanding can be grasped from an elementary case of a single firm production decision.

![Diagram](https://via.placeholder.com/1200)

Efficiency in monopoly would imply production of output where marginal revenue equals marginal costs and price would be charged corresponding to that efficient level of output. Unlike the case of perfect competition where it is price equal to marginal cost. The above diagram is helpful in understanding allocative efficiency i.e. difference between the cost of producing a marginal product and valuation of a consumer i.e. reservation price of that product. If the cost of producing one more unit of a product is different from willingness of consumer to pay then there exist allocative inefficiency.
If an agreement limits the output then it can have two impacts:

First, if the firm is required to produce a level more than the efficient level then it would require over utilisation of resources. Implies firm producing at the steeply rising portion of marginal cost and might have to produce in diminishing returns to factor/scale region. Or, if output is required to be produced below a certain level then it imposes a dead weight loss (DWL) on society and firm. The firm cannot increase its output even though there are increasing returns. DWL shows the loss of opportunity to bank on resource utilisation to its optimum. Especially when restriction is impressed upon a monopoly firm, then this DWL is greater than the DWL in case of restriction in a perfectly competitive firm.

However, restriction per se will not be conclusive enough to establish the agreement as anti-competitive as per competition act. Law is concerned with competition and not competitors. Competition Law w.r.t vertical integration among firms, doesn’t have an easy task. For e.g. - An agreement between a producer and a retailer- The retailer is required to sell only producers output and hence restricting his scale and scope of operation. This agreement may not be binding or eliminating competition, if in case the retailer happens to be a small player in his market. Such an agreement will not affect competitiveness in any market. Infact such an agreement between producer and retailer apart from benefitting both the parties can be favourable to consumers too. In other words it may improve both consumer and producer (consider both the engaged parties in agreement) surplus and will then be pro-competitive.

Within mentioned five vertical agreements, various permutation and combinations are possible which can have benefits and loss either to a party or both. Role of law comes in to determine their net effect, weighing various issues in its purview. The six possibilities identified in the act under section 19(3)

(a) Creation of barriers to new entrants in the market;
(b) Driving existing competitors out of the market;
(c) Foreclosure of competition by hindering entry into the market;
(d) Accrual of benefits to consumers;
(e) Improvements in production or distribution of goods or provision of services;
(f) Promotion of technical, scientific and economic development by means of production or distribution of goods or provision of services.

Section 19(3) of the act essentially talks about the possible consequences of vertical agreements. Market consists of consumers and producers. Impact of a market activity can be analysed from observing consumer and producer surplus. While vertical restraints may increase the joint profits for the firms involved (by say removing externalities), it cannot be presumed that these are socially desirable. Firms will
generally desire to restrict competition to raise profits while in contrast society may prefer more intense competition.

Understanding the impact of a vertical agreement, apart from surplus, requires considering factors like market power, market share, market concentration, product differentiation, existence of barrier to entry and exit and nature of oligopolistic interaction. In the example mentioned above it is reasonable to argue that producer restrains the activity of retailer and hence effectiveness of competition is impeded. Theoretically such an argument seems valid but one cannot ignore the conduct of business related activities. Every contract between parties describes the conduct of a transaction for example- deadline to deliver a product, such a clause then implies binding the process of production in terms of time. Thus, important is not what form competition takes but what outcome and affect any form has on market. An integration has efficiency gains and consequences on competition, impact of both may or may not be felt by the consumers.

NET EFFECT of vertical agreement= Cost (AAEC) - (Efficiency Gains+ Consumer benefit)

- An agreement inflicts cost which is in terms of appreciable adverse effect on competition and at the same time reaps out gains and also may benefit the consumer. If net effect is positive then the agreement is anti-competitive because cost outweighs the efficiency gains and consumer benefits.

Vertical agreements that improve vertical control over and co-ordination of decisions may increase economic efficiency as well as profits. Provisions that eliminate double price mark-ups both reduce retail prices and increase profits; economic efficiency increases as both components of total surplus, producer and consumer surplus, increase. Provisions that reduce the extent to which vertical or horizontal externalities discourage the supply of retail services and efforts may result in a more efficient supply of service and quality to consumers, especially if otherwise there would be substantial free-riding on retail services or investments in reputation by engaging in resale price maintenance and exclusive distribution agreement.

Vertical arrangement may improve economic efficiency; indeed vertical agreements such as exclusive territories or franchising are introduced to avoid the consequences of free-riding, competition between retailers of the same brand may also be restricted or eliminated. For that reason, distributors may be interested in the enforcement of agreements with their suppliers to restrict competition at the retailers' level. When distributors have market power, this interest is particularly likely to emerge if entry in distribution is difficult. Exclusive distribution agreements that allow profitable price discrimination may or may not increase efficiency. Vertical agreements can also be used to help enforce collusive price agreements between manufacturers. For instance, resale price maintenance can facilitate collusion as price cuts at the retail level are easier to detect. Apart from the intentions to eliminate externalities resale price maintenance, on upstream party’s part, can be to hold the reins of downstream party.
Let us consider an exclusive supply agreement case in detail. In a scenario where a manufacturer asks the upstream party for supply of inputs exclusively for itself there is a chance that it can create a monopoly, as those inputs are supplied only to him or may be a major chunk of it. Also, that firm can, by exclusive supply of input agreement, foreclose competition market for those who are unable to compete with him due to unavailability of such an input. If simply this is the entire picture then an informant will file a complaint with competition commission and the agreement will be termed void and manufacturer will be asked to comply with penalties due to such a breach. There is also a particular case for networks of exclusive purchasing agreements where a large share of retail outlets is tied exclusively to existing producers which can foreclose the market to new producers or prevent producers.

Additionally, long-term exclusive supply contracts by an upstream party with a large market share could be used to increase the entry cost of a potential competitor if distribution involves large economies of scope. Suppose, for example, that a manufacturer is distributing his products through distributor who could also distribute the products of a potential competing manufacturer. If there are synergies from distributing both lines of products, a potential competitor entering the market could have low retailing costs. Exclusive supply provisions would rule this out. If these provisions force a potential competitor to distribute his products in a less efficient way, for example by setting up his own retail network, the increased distribution costs could deter entry. The loss of scale and scope economies may hurt the distributor in the agreement if entry does occur, but they can be compensated for this risk by a share of the extra profits generated so long as entry is successfully deterred.

A manufacturer in his defence can prove that such an agreement enabled technological advancement, say invention of machinery or input that became possible given the needs and idea of the manufacturer. Also, provisions that allow the vertical structure to realise more of the productive value of its investments in know-how may efficiently encourage investments in productive know-how. Or that exclusive supply agreement reduced transportation cost or administration cost and benefits of which are passed on to the consumers in form of low price then the Competition commission cannot out rightly declare the agreement anti-competitive rather it will weigh costs in terms of foreclosure vis-a-vis the benefits in form of technological improvement or advancement and consumer benefits.

Franchise agreements may also reduce market competition in the long run if vertical restraints can be used to erect substantial entry barriers and if competition is not already substantial. On the other hand, franchise agreements also can promote entry and competition. When franchise agreements increase profits without raising entry barriers, either through increased efficiency or increased oligopolistic co-ordination, they promote entry. When franchise agreements increase the returns that can be earned from investments in know-how, they promote investment in know-how, which in turn
may lead to entry and both new brands and new retailers. Where franchising improves access to capital, it promotes entry.

Therefore, a vertical structure can use its control to maximise its own profit, which may or may not also increase economic efficiency. For example, the choice of product quality or retail service that maximises profit will not necessarily be the choice that maximises consumer surplus or total surplus; as a result vertical restraints that increase control over retail service and quality may increase economic efficiency and also perhaps consumer surplus, but will not necessarily always increase both. The greater the competition from other suppliers faced by the firm, however, the more the firm will be constrained to make choices that benefit consumers, and therefore, the more likely it is they will make choices that increase economic efficiency and consumer surplus as well as profits.

Anti-competitive effects of vertical restraints are likely to be insignificant in competitive markets. Rather their efficiency enhancing effect and benefit to consumers is likely to dominate. However, in less competitive markets the risk is much greater that vertical restraints can be used to reduce competition or otherwise reduce economic efficiency. If the vertical structure has sufficient market power, it will have less incentive to reduce prices and will tend to absorb any efficiency gains in the form of extra profits. Vertical restraints may reduce intrabrand competition without harming economic efficiency.

The relevant market may include products of other franchise systems or of producers using distribution systems other than franchising. Therefore, to analyse vertical agreement competition policy should focus on the extent of competition in the market from other brands and from other retail distribution systems, rather than on intrabrand competition. Exclusive distribution and exclusive supply agreement can represent a collaborative effort of the buying and selling parties to build up excess capacity (output), in oligopolistic market, and deter entrance. Anti-competitive effects are only likely where interbrand competition is weak and there are barriers to entry. With sufficient competition from other brands and retailers, an upstream party will be unable to reduce economic efficiency by exercising market power over pricing or the choice of quality in a properly defined market even if intrabrand competition is completely eliminated. The efficiencies that result from the introduction of those restraints will increase profits for the vertical structure.

Consumers are much more likely to benefit from the efficiency gains if the vertical structure faces strong competition from other suppliers of goods that can be considered close substitutes of the product in question. In fact, greater the degree of competition the quicker the consumers benefit from passed-on cost efficiencies through increase in sales. If firms compete mainly on price and are not subject to significant capacity constraints, pass-on may occur relatively quickly. If competition is mainly on capacity, and capacity adaptations occur with a certain time lag, pass-on will be slower. If
competitors are likely to retaliate against an increase in output by one or more parties to the agreement, the incentive to increase output may be tempered.

As noted above that competition enhancing activity will be in favour of the society because first welfare theorem will ensures pareto improvement. But at the same time vertical agreements that cause adverse impact on competition may as well have positive effect on consumers. Say a tie-in where the input supplier ensures quality inputs are used in manufacturing a product. The input supplier by this agreement may have deterred competition but has ensured quality product to consumer. This is largely in favour of consumers in case of health related products.

The condition that consumers must receive a fair share of the benefits implies, in general, that efficiencies generated by the restrictive agreement within a relevant market must be sufficient to outweigh the anti-competitive effects produced by the agreement. Benefits derived by consumer are not only in form of cash - from a reduced price or increased quantity supplied at the same price. Vertical integration is efficient when it enables production of a new technology or drug. Research and development requires huge investment and has an element of uncertainty attached. Vertically integrated structure that in any way reduces this risk of the manufacturer of a new product is an efficiency enhancing structure. Consumer will have an advantage from it if the benefits are passed on to them. A similar case is also applicable if a vertical agreement improves distribution process of a product. Say it helps in making the reach of the product to many more areas.

In conclusion, the six factors in section 19 (3) can be divided in to two parts. If first three happen to be the outcome of the integration then the agreement is void or if the last three are the effects of vertical agreement then such an agreement, being efficiency enhancing, is pro-competitive. If a case presents a scenario, where the first three and the last three are present simultaneously then the nature of vertical agreement is ambiguous and calls for a detailed analysis.
SECTION IV

In the above 3 sections reasons as to why the net effect of vertical agreement on market is subjected to debate is established. In this section we will consider some very basic factors that should be considered while assessing any vertical agreement.

4.1 Characteristic and structure of the market

Degree of competition in the relevant market(s) can be defined using number of players in the market and their proportion of share in the total market. Total market size and market share can be calculated from each firm's sale of relevant product.

Below is a matrix showing 4 combinations of level of competition in upstream and downstream market. Purpose is to derive, from the matrix, when a vertical integration can deter entrance or drive out existing firm(s)-

\[
\begin{array}{c|c}
\text{UPSTREAM} & \text{DOWNSTREAM} \\
\hline
\text{Competition} & \text{Competition} \\
\text{Less competition} & \text{Competition} \\
\text{Competition} & \text{Less competition} \\
\text{Less competition} & \text{Less competition} \\
\end{array}
\]

Case 1 - Competition and competition

This is an ideal situation where there are many firms in both the markets. Every firm, at any level or stage of production to maximise profit, will earn more by either selling more or by reducing prices; or will look out for cost reducing deals. Any vertical integration will be a Pareto improvement. Probability of AAEC is very small.
Case 2-Competition and less competition

An *exclusive* vertical agreement may drive out competitors in the upstream market as post agreement the residual party may have no buyers for their *(excess)* supply. On the other side of production chain i.e. in downstream market, an appreciable adverse effect on competition is unlikely. The same result is also likely when a downstream party with a considerably small market share concludes a vertical agreement.

New entrants will be deterred to enter the competitive upstream market when (all or majority) buyers are already in deal with incumbent upstream firms. It is to say that market for their output produced may not be enough for their investment to break even.

To understand, take an extreme example: - Competition in upstream market and 1 player in downstream market i.e. competition and monopsony. Every competitive player would want to lure this monopsonist to buy their product. Players in upstream market who fail to strike a deal with the sole buyer of their output might be forced to exit the market. Hence, competition concerns arise in the upstream market.

For example:- Some manufacturers in electronic items do is that they offer a high discount to wholesalers especially in regions where there are probably the only ones present on certain condition. Say, schneider manufactures switches in a small place such as Barmer in Rajasthan where there is only one wholesaler who supplies switches to distributors who then supply them to the retailer or directly to customers. Schneider will agree to offer a high discount to that wholesaler if he agrees to the condition that he will only supply Schneider switches.

The case of less competition in downstream market becomes possible especially in remote/small places where there are not many wholesalers and most people are engaged in agricultural activities and do not want to engage in any other activity because of say, risk, uncertainty and other factors. Also, the manufacturers/distributors have no choice but to buy those as striking a deal with dealers in other regions will include a transportation cost also.¹⁰

Case 3- Less Competition and competition

A player from competitive market buys from player in a less competitive market. Barrier to entrance are now on the demand side of the good concerned. This can happen when supplier of the good is/are not allowed to deal with rest of the downstream party. When buyer does not find enough supply that meets his demand then it leads to a possibility of driving out of firms from the market. As suppliers are few who deal with handful of buyers. Others are left out and may lead to concentration of buying power.

¹⁰ This practice was observed by Surbhi Singhvi, MA Economics student, Gokhale Institute of Politics and Economics, Pune.
For example, There is a producer (A) that holds 70% of the market share of a good X whose distribution is through 2 channels- “at the counter” or home delivery. There are 3 other players who equally hold the remaining 30%. In such a oligopolistic market structure A has essentially been the leader (in terms of price setting). Say there has been no new entrants in the business for 6 years. Say, A gets into an exclusive supply agreement with 20% of “at the counter” distributor constituting 45% of his sales. Such an agreement forecloses the market for its rivals by denying them to deal with the most attractive outlets. The agreements raise the costs and reduce the revenues of rivals. Given the market position of A, the absence of new entry and the already weak position of competitors it is likely that competition in the market is eliminated.

An extreme case will be- monopoly and competition. As there is only one producer of the product and many buyers of it a monopolist will easily be able to charge a suitable mark-up price over his marginal cost. Those buyers who can’t afford it might have to leave the market. So, now competition issues will be in downstream market.

The mismatch (if any!) in demand and supply, in the above 3 cases, can be understood from a simple demand-supply model-

![Demand-Supply Diagram](image)

**Case 4- Less competition in both the markets**

It presents possibility of both- exit of existing firms and barrier to entry with possibility of efficiency enhancement as well. There will be a stiff competition among the players at same level to capture upstream or downstream market. Such a case involves in-depth scrutiny.
The 4 cases are solely analysed on the basis of level of competition and supply-demand mismatch. Elementary step is to calculate the market share in a less competitive market of the party involved in the agreement, both before and after the agreement. Increase in market share, even by a significant amount, per se does not make a vertical agreement anti-competitive. It is anti competitive when this additional market share is gained by driving out existing player(s). While looking at the elimination of competition, important is to look at the proportion of sale which is eliminated, relative to total market of the product, in the relevant market.

Industry concentration can be calculated using HHI. "HHI" means the Herfindahl-Hirschman Index, is calculated by squaring the market share of each firm competing in the market and then summing the resulting numbers.\(^{11}\) The HHI takes into account the relative size and distribution of the firms in a market and approaches zero when a market consists of a large number of firms of relatively equal size. The HHI increases both as the number of firms in the market decreases and as the disparity in size between those firms increases.\(^{12}\)

Now the benchmark figures of HHI- declaring an agreement void based on market concentration- should be market specific. A good may require-

- I. high fixed cost and low marginal cost;
- II. low fixed cost and high marginal cost;
- III. low fixed and marginal cost;
- IV. high fixed and marginal cost.

The benchmark to decide possibility of deterrence, based on HHI index should have a low HHI index for I and IV; and a high HHI index for II and III. A low benchmark HHI for high fixed cost industry because- an industry requiring high fixed cost in itself acts as a deterrent for a potential player and if concentration swells further then it may make entrance in such an industry even more risky and uncertain.

The next step is to ascertain whether the above was the objective or the effect of the agreement. If objective of integration vertically was to eliminate or create barriers to competition then the agreement becomes void straight away. However, In the case of agreements and practices whose object is not to restrict competition, it is normally necessary to proceed with a more detailed analysis.

Reduced competition may lead to lower sales and marketing expenditures. Such cost reductions are a direct consequence of a reduction in output and value. The cost

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\(^{11}\) Named after economists Orris C. Herfindahl and Albert O. Hirschman.

\(^{12}\) The closer a market is to being a monopoly, the higher the market's concentration (and the lower its competition). If, for example, there were only one firm in an industry, that firm would have 100% market share, and the HHI would equal 10,000 (100^2), indicating a monopoly. Or, if there were thousands of firms competing, each would have nearly 0% market share, and the HHI would be close to zero, indicating nearly perfect competition. Markets in which the HHI is between 1000 and 1800 points are considered to be moderately concentrated.
reductions in question do not produce any pro-competitive effects on the market. In particular, they do not lead to the creation of value through an integration of assets and activities. They merely allow the undertakings concerned to increase their profits. Restrictions reduce output and raise prices, leading to a misallocation of resources, because goods and services demanded by customers are not produced. They also lead to a reduction in consumer welfare, because consumers have to pay higher prices for the goods and services in question.

To access the possibility of barrier to entry commission must first look into the various factors faced by a potential new entrant.

- The cost of entry including sunk costs. Sunk costs are those that cannot be recovered if the entrant subsequently exits the market. The higher the sunk costs the higher the commercial risk for potential entrants.
- The minimum efficient scale within the industry, i.e. the rate of output where average costs are minimised. If the minimum efficient scale is large compared to the size of the market, efficient entry is likely to be more costly and risky.
- Access to cost efficient technologies. If new entrants are denied the access to such technology then they are at a disadvantage and might be deterred to enter as entry will be more risky and less effective.
- Response of incumbent firms to new entrants in the past.
- The economic outlook for the industry may be an indicator of its longer-term attractiveness. Industries that are stagnating or in decline are less attractive candidates for entry than industries characterised by growth.
- Past entry on a significant scale or the absence.

This factor essentially highlights the cost imposed if there is AAEC in presence of creating a difficulty in entering the relevant market and driving out existing competitors. The third step which only becomes relevant when an agreement is found to be restrictive of competition is to determine the pro-competitive benefits produced by that agreement and to assess whether these pro-competitive effects outweigh the anti-competitive effects.

4.2 Efficiency Gains

The cost in terms of appreciable adverse effect on competition is pitted against efficiency gains from a vertical agreement. Efficiencies may result from economies of scale, i.e. declining cost per unit of output as output increases. Larger scale may also allow for better division of labour leading to lower unit costs. Firms may achieve economies of scale in respect of all parts of the value chain, including research and development, production, distribution and marketing. Learning economies constitute a

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related type of efficiency. As experience is gained in using a particular production process or in performing particular tasks, productivity may increase because the process is made to run more efficiently or because the task is performed more quickly.

Economies of scope are another source of cost efficiency, which occur when firms achieve cost savings by producing different products on the basis of the same input. Such efficiencies may arise from the fact that it is possible to use the same components and the same facilities and personnel to produce a variety of products. Similarly, economies of scope may arise in distribution when several types of goods are distributed in the same vehicles. For instance, a producer of frozen vegetables starts to produce frozen pizzas. The producer may obtain economies of scope by jointly distributing their products. Both groups of products must be distributed in refrigerated vehicles and it is likely that there are significant overlaps in terms of customers. By combining their operations of distribution, the producer may obtain lower distribution costs per distributed unit.

- Efficiency realized from each agreement- Example: resale price maintenance and exclusive distribution agreement resolve vertical and horizontal externality of free-riding.
- Magnitude of an efficiency realized- In ambiguous cases where there are costs inflicted in terms of appreciable adverse effect on competition and also efficiency gains realized. If efficiency gains are more than cost, then the agreement is not anti-competitive.
- When efficiency gains will be realized- Time period when these efficiency gains will be realized i.e. whether already realized or will be realized in long run.

4.3 Elasticity of demand.

The benefits from vertical agreements are passed on to the consumers. The fact that undertakings may have an incentive to pass on certain types of cost efficiencies does not imply that the pass-on rate will necessarily be 100%. The actual pass-on rate depends on the extent to which consumers respond to changes in price, i.e. the elasticity of demand. The greater the increase in demand caused by a decrease in price, the greater the pass-on rate. This follows from the fact that the greater the additional sales caused by a price reduction due to an increase in output the more likely it is that these sales will offset the loss of revenue caused by the lower price resulting from the increase in output. In the absence of price discrimination the lowering of prices affects all units sold by the firm, in which case marginal revenue is less than the price obtained for the marginal product. If the firms concerned are able to charge different prices to different customers, i.e. price discriminate, pass-on will normally only benefit price-sensitive consumers.
Also no significant impact can be caused by firms if its customers have an alternate available for that good. Those goods whose substitutes are easily available have inelastic demand. This implies that a reduction in price, to earn more by selling more, might lead to lower marginal revenue. Through vertical integration intention might be to decrease the probability of availability of substitutes and deterring interbrand competition.
CONCLUSION

Economics of vertical agreement presents arguments of parties involved and parties affected. Analysis requires scrutiny of each party’s relevance of reasoning and measurement of magnitude of the outcome. Any vertical agreement case in first read might not present an either-or scenario. It demands careful investigation; use and understanding of behavioural economics; and careful examination and judgement of its net outcome.

One way, we can analyse the outcome of a vertical integration, is by looking at scale of production of firms, producing in the market under scrutiny.

Let total market output be X units and defined by

\[ X = \sum_{i=1}^{n} x_i \]

\[ x_1, x_2, x_3, ..., x_n \] represent the output of firm 1, 2, 3, ..., n respectively in the market.

Level of output of each firm, in this case, can be calculated by multiplying their respective market share with total output produced, in that particular market.

If firm 1 that produces \( x_1 \) units, gets into an agreement then possible effect of that vertical agreement, on each firm, can be denoted by - \( x_1 + e, x_2 - a_2, x_3 - a_3, ..., x_n - a_n \)

Where,

- \( e \) is change in output of firm 1 due to a change in price or composition of input or quantity of input used, due to the agreement.
- \( a_i \) is change in output of the \( i^{th} \) firm due to price or composition of input or quantity of input used by firm 1.

1. **If \( a_1 = 0 \)**
   Vertical agreement of firm 1 results in an increase in its output and has no affect on other firm output.

\[ X' = x_1 + e + \sum_{i=2}^{n} x_i \]

\[ \Rightarrow \text{Efficiency gain} \]

\( e \) is a positive increase in output of firm 1 which can be attributed to efficiency gains realized from vertical integration.

A special case can be when \( a_i(s) \) are also negative i.e. vertical integration of firm 1 has a positive externality on other firms output. In that case output of all firms (which have non-zero positive \( a_i \)) rises.
2. If $e = 0 / e < 0$ and $a_i > 0$
Vertical agreement of firm 1 results in no change/ decrease in its output and has a negative effect on other firms’ output.

- New $X < \text{old } X$
- Market worse-off

Such an agreement is not in favor of the market as a whole.

3. If $e > 0$ and $a_i > 0$
By vertically integrating, firm 1 realizes efficiency gain which leads to an increase in output but at the same time such an agreement adversely impacts the scale of production of other firms who are not part of the agreement.

$$X'' = (x_1 + e) + (x_2 - a_2) + (x_3 - a_3) + \ldots + (x_n - a_n)$$

- Net amount of $X$ is ambiguous as it depends on value of both $e(\text{positive})$ and $a_i(\text{negative})$.
- Cannot conclude the overall outcome of the agreement.

In such a case, magnitude and consequence of $e$ and $a_i(s)$ are compared to gauge the net effect on market.

Therefore, by looking at the change in output of all the firms we can to an extent know the kind of impact the agreement has on the production side of market. The above analysis does not take into account the effect of agreement on consumers.

The above model presents a very basic mathematical model and the first step to understand the effect of vertical integration. In reality things are not this simple and require more depth analysis. While market shares are relevant, the magnitude of remaining sources of actual competition cannot be assessed exclusively on the basis of market share. More extensive qualitative and quantitative analysis is normally called for. The capacity of actual competitors to compete and their incentive to do so must be examined. If, for example, competitors face capacity constraints or have relatively higher costs of production their competitive response will necessarily be limited. In the assessment of the impact of the agreement on competition it is also relevant to examine its influence on the various parameters of competition. This is particularly the case when an agreement eliminates price competition or competition in respect of innovation and development of new products.
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