Two-Sided Market Competition in Television Industry – The Way Forward In India

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I. Introduction

Commercialisation of Indian television started in 1980s. As television penetration grew over time, advertisers started considering it as a lucrative platform for advertisement. As a result, television market started to show features of two-sidedness where content was sold to the Viewers and viewers’ attention was sold to the advertisers. Before 1991, only Doordarshan, the state monopoly supplier of television content, operated in a terrestrial distribution system. It was in 1991 that satellite television was introduced in India coupled with cable distribution system increasing television viewership enormously. As a consequence to that, importance of television as an advertising medium also increased drastically. With cable distribution system being introduced, viewers started to pay for the channel package they were offered. In a package, some FTA (free-to-air) channels are bundled with some other pay channels. However, so called pay channels also heavily depend on advertising revenue. Actually, pay channels have been facing a peculiar problem in collection of their subscription revenue from the viewers. In analog cable system, local cable operators have had the practice to underreport viewer base which has been very difficult to track down without required digital technological support. Of late, to address the problem effectively, regulatory measure to digitise the analog cable distribution system has been taken. It is expected that the mandatory digitisation process will be completed in a phased manner by December 2014 for the entire country. Backed by this digital addressable system (DAS), an important issue of marketing strategy has come before the broadcasting industry. Broadcasters now have to take a decision about how to optimally charge the viewers and the advertisers for the sale of content and viewers’ attention respectively. The system being an addressable one, problem of underreporting of subscriber base will no longer remain as a hindrance to raise revenue from the viewers. The alternative distribution system i.e., DTH (direct-to-home), by virtue of its technological features, is digital and addressable. Therefore digitisation of the existing analog cable will make the distribution system entirely addressable. It is now time for the broadcasters to reap the benefit of such an addressable system which allows them to charge the viewers a variable price and chalk out strategy about product differentiation accordingly. To shed light on the issue, a proper theoretical framework is required. In the present paper an attempt has been made in that direction. The distribution segment is considered as a unified digital platform. In fact, explicit consideration of multiplicity of distribution platforms will not provide any additional insight in the present context where content pricing decisions are taken by the broadcasters and not by the distributors. This paper draws from the recent literature on two-sided market (e.g., Rochet and Tirole, 2006, Armstrong, 2006, OECD Policy Roundtable on Two-Sided Markets, 2009). A duopoly model of product differentiation in the backdrop of two-sidedness is considered here.

The rest of this paper is organised as follows: Existing literature relevant to this work is briefly reviewed in the next section followed by the objectives of the study. Thereafter, the model and equilibrium outcomes are discussed in the subsequent sections. The last section concludes the paper.
II. Literature Review

Two-sided market structure as an area of research is more or less a decade old. Both general discussions and television broadcasting industry specific applications are available in literature. The OECD Policy Roundtable on Two-Sided Markets (June, 2009) with analytical note by David Evans calls for a special mention here. Although the aim of this document is to shed light on implications of two-sidedness for competition policy, it effectively helps in understanding the economics of two-sided markets relevant for the present paper. It is noted in the document that there is no universally accepted definition of a two-sided market. The firms operating in such markets are often called ‘platforms’ and they are characterised by the presence of some common elements. The most important one is the presence of two distinct groups with indirect externalities across the groups who are served simultaneously by the platform. The next element is that transaction volume on the platform is sensitive to the way price is distributed between the consumers. Also there might be joint costs for providing services to both types of consumers. Therefore, traditional market definition cannot adequately shed light on market outcomes unless the linkages between the two sides of the market and possible presence of joint costs are taken care of. Any single-sided multi-product firm is not characterised by such externalities and joint costs. So conditions for profit maximization have to be modified adequately. Commercial success of such platform depends on how optimally it coordinates the interdependent demands of two distinct groups by devising an optimal price structure. In the present paper, a duopoly platform model has been constructed.

Rochet and Tirole (2006) discuss usage and membership externalities separately and then build a model integrating the two. This is not done in any earlier literature. As a prerequisite to that, the nature of interaction between the two sides must be identified clearly. In the article, examples are drawn extensively from various types of two-sided platforms e.g. advertiser supported media, payment system like credit card, software platforms etc. To express in simpler terms, it is important to know whether any side of the platform is deriving benefit from merely the membership of the other side or the intensity with which the other side is using the platform. Accordingly, the price structure has to be devised. It is a very general model allowing for various possibilities. Platform competition is not allowed here. The price level or total price of the monopoly platform is determined by a standard Lerner formula. The optimal price structure is obtained by maximizing the volume of usage with respect to unit prices charged on two sides of the platform subject to the constraint that unit prices of the two sides add up to the total price determined by the platform. However such framework of monopoly platform does not apply to many of the examples of two-sided markets and especially in partly or fully advertising supported television broadcasting markets.

Platform competition is considered in Armstrong (2006). It starts with a monopoly platform and extends it to a model involving two competing platforms. No conscious effort is made in this paper to make a distinction between usage externality and membership externality. Two groups of agents are considered for two sides of the platform. It is found that emphasis on external benefit from one side when setting the price to the other side for a duopolist is twice as much as that of a monopolist under the restrictive condition that each agent chooses to join a single platform for exogenous reasons. Later in this paper, the model is further extended to relax the assumption of single-homing by both groups of agents. Multi-homing on the part of one group of agents is considered. However, no competition is considered between platforms to attract agents of multi-homing group. Agents are assumed to be heterogeneous in nature. Each group is considered to be uniformly distributed along the Hotelling line. Two platforms are located at the two endpoints. Two product differentiation parameters are considered for the two groups that describe the competitiveness on the two sides of the platform. This is a standard practice in two-sided market literature to introduce platform competition (see, among

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1 When an agent chooses to use only one platform, it is commonly said that the agent is single-homing. On the contrary, if an agent chooses to use several platforms, the act is termed as multi-homing.
others, Gabszewicz, Laussel and Sonnac 2004; Kind and Stährler, 2009 in the specific context of television industry). These Hotelling type models of product differentiation have some limitations. First of all, these models cannot be easily generalized to more than two firms. More importantly, products are differentiated on the basis of some attributes to lie on a particular point in the space of attributes. However specific measurement of attributes appears very artificial. Also, the set of attributes may not be exhaustive to measure differentiation. Therefore, such modelling may have academic value, but for all practical purposes, it is better to avoid identification of specific attributes. Therefore, a non-address type duopoly model\(^2\) of product differentiation is more appropriate in the present context and this is done in the present paper following the framework of Dixit (1979). Network externality is added to the original framework with price taker viewers and advertisers on the two sides of the market.

In the context of network externality, one distinguishing feature of most media firms is that majority of media consumers dislike advertisements while advertisers would like to reach large number of consumers. It leads to a situation where there are negative externalities from advertisers to viewers, but positive externalities from consumers to advertisers. So media firms constitute a special segment in the class of two-sided markets and within this segment, the television industry demands special emphasis in terms of the time people devote to television viewing and the amount of advertising it transmits. In the context of television broadcasting, the above-mentioned feature of externality is discussed extensively. However in earlier papers (e.g., Beebe, 1977; Spence and Owen, 1977) number of advertisements in each programme was considered to be exogenously fixed. Later Anderson and Coate (2005) in their seminal paper on the TV market have considered level of advertisement as a decision variable taking into consideration nuisance value of the same. Also in Gabszewicz, Laussela and Sonnac (2004) and Kind, Nilssen and Sørgard (2007), opportunity cost or disutility related to the time devoted to watching advertisements is considered. The present paper takes almost a similar stand in this respect, although theoretically three categories of viewers are considered. The first category considers advertisement as nuisance in conformity with the above discussion and in fact this category dominates the market. The second category is neutral to advertisements whereas the third category likes advertisements. To internalise the cross group externalities between viewers and advertisers fully, the television broadcasting platform should ideally segment the market for these three categories of viewers and charge them accordingly. Generalisation of negative externality from advertisers to viewers may deprive the platform of potential revenue generation especially from the viewers. If the television advertising market is not yet saturated, allowing positive externality from viewers to advertisers can theoretically lead to entry possibilities of new firms which is discussed in the present paper.

### III. Objectives of the Study

1. To derive conditions when two-sidedness is beneficial for the industry, given variable viewer price.
2. If it is beneficial, to examine how extent of product (programme mix) differentiation of television channels of a particular genre affects equilibrium outcomes.
3. To examine how similarity or dissimilarity of intrinsic values of the channels to the viewers affect the above results of 2.

### IV. The Model

Here a short run duopoly model with two competing television channels producing two differentiated products (programme mix) is considered, where each channel supplies programme mix to the viewers

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\(^2\) In the address-type models, goods are characterised by their attributes. Consumers have different tastes for these attributes. In equilibrium, the optimum degree of product differentiation is determined, that is, whether firms decide to produce goods that are close substitutes or that have attributes far apart in the space of attributes.

In the non-address-type models, there is a set of goods that can be produced and consumed. All or a subset of the available range of goods will be produced in equilibrium.
and viewers’ attention to the advertisers. Here quantity competition is considered since it is found that in television broadcasting industry, the firms think in terms of underlying quantities.

Cost of supplying programme mix or content to the viewers is considered to be fixed in the short run. Whether the channel is outsourcing the production of programmes or producing it in its own production house does not make any difference so far as the purpose of the present paper is concerned. There is no marginal cost involved. Channel programmes reach the viewers via some digital addressable distribution platform. Channels might pay carriage fee to the distributors which may be considered as a fixed cost in the short run. To serve the advertisers, no additional cost is incurred by the channel. In fact, advertisers are purchasing viewers’ attention and viewers are joining the platform to get entertained by the television programmes. Effectively, the content cost can be considered as the joint cost to serve both viewers and advertisers.

Viewers cannot watch the channels free of charge. Viewer price is a variable price in this model. They have to pay \( p_i \) to channel \( i \) per hour of viewing the channel. This is like usage charges as per the terminology used in their article by Rochet and Tirole (2006). Till today, this pricing scheme may not be a reality in general. However, pay-per-view provision is there, and in that sense this variable pricing reflects future of the television industry. Moreover in this paper, thrust is on cross group externality where usage is important and not membership of the platform. Advertisers will pay more to the channel for advertising if viewers intensively use the platform. Subscription fee paid by the viewers, if any, is ignored since such membership charge will not give any further insight regarding cross-group externality.

Now, market domain needs clarification at this point. Television channels are categorised in accordance with their programme types, e.g., mass entertainment channels, news channels, infotainment channels, kids channels, sports channels, movies channels, music channels, lifestyle channels etc. Not only that, India being a multilingual country, there are Hindi and English language channels to cater the national market and regional language channels to cater the regional markets. Therefore against this backdrop, cross categorisation of channels (across language and programme type, e.g., Hindi general entertainment channels etc.) only make sense. In the present framework, inter-category channel competition is ruled out. This means to say, any viewer will choose between channels in a particular category and not between different categories. Even if he wants to see channels of other categories, time slot for such viewing will be different. So within a particular time slot there is no inter-category competition. This assumption is a simplifying one; however any relaxation of such assumption will only complicate the framework without any further insight. Also, extension of number of firms to more than 2 in a particular category will not serve the framework in a better way. One more thing needs to be mentioned here. Channel competition is considered here under normal circumstances. If there emerges mass hysteria for any programme like Kaun Banega Crorepati (especially season 1) or IPL matches, the concerned channel gains monopoly status temporarily during the telecast of that particular programme as no other programme can be substituted for that programme. Barring these special cases, duopoly platforms are considered in each cross category.

On the other side of the platform, advertisers are indifferent between the two channels so far as buying advertising time is concerned. They are willing to pay more if a channel is more intensively used by the viewers. This is the first externality content to be optimally internalised by a channel given the regulatory constraint in the form of maximum number of advertising time in seconds per hour of programming.

This is further to be mentioned that number of viewers is fixed in the short run. Short run is defined as a time period within which viewers’ tastes will remain unchanged. So the same number of viewers will be there in each cross category of channels. Viewing hours devoted to a channel is variable in the model.
Viewers are identical in terms of the intrinsic value of a channel. However, their valuations of advertisements which is coming in package with the programme to them may differ. Advertisements interrupt television programmes which involve costs to the viewers. They also have some benefits in the form of information and entertainment. Valuation of advertisements critically depends on the subjective weights attached to the costs and benefits. There may be three categories of viewers. For the first category, weight attached to costs is much higher than that to benefits. As a result, advertisement is nuisance to them. So this category is paying an extra price for being interrupted by commercials. In that sense, the concerned channel is facing a negative externality benefit. The second category shows neutrality to the commercial breaks or pop-ups. To them, weights attached to benefits and costs are compensating each other. This leads to a zero net effect of externality. For the third category of viewers, weight attached to programme interruption cost is much less than that to the benefits of advertisements. Therefore, they derive a positive benefit from advertisements and for them, positive externality can be optimally internalised by the channel. However, it is well documented in literature that the first category dominates the market.

Following Dixit (1979) and cross group externality (here between viewers and advertisers) as discussed above, inverse demand functions for the contents of the channels are

\[ p_1 = \alpha_1 - \beta v_1 - \gamma v_2 - \delta a_1 \quad \& \quad p_2 = \alpha_2 - \beta v_2 - \gamma v_1 - \delta a_2, \]

where \( p_i \) = per hour content price to the viewers,
\( v_i = \) viewing hours of channel \( i \) for a viewer per period of subscription for the channel,
\( \alpha_i = \) per hour intrinsic value of channel \( i \) to the viewer which is fixed in a single period of subscription which is positive,
\( a_i = \) advertising seconds per hour of programming on channel \( i \), \( i = 1, 2 \)
\( \beta = \) absolute value of own viewing time sensitivity of hourly viewing price,
\( \gamma = \) absolute value of cross viewing time sensitivity of hourly viewing price entering with a negative sign since the products are imperfect substitutes of each other,
\( \delta = \) level of advertising sensitivity of hourly viewing price. \( \delta > 0 \) for the majority group of viewers who dislike advertisements, \( \delta = 0 \) for those who are neutral to programme interruption for advertisements, \( \delta < 0 \) for the last group of viewers who like advertisements.

Inverse demand functions for the advertising spots of the channels are

\[ q_1 = \mu v_1 - \theta a_1 \quad \& \quad q_2 = \mu v_2 - \theta a_2, \]

where, \( q_i = \) price paid by advertisers to channel \( i \) per second of advertisement, \( i = 1, 2 \)
\( \theta = \) absolute value of advertising time sensitivity of advertising price,
\( \mu = \) absolute value of viewing time sensitivity of advertising price. Viewing time indicates how intensively the platform is used by the viewers after taking the membership i.e. subscribing to the channel. Advertisers are interested in this intensity since they derive benefit from the intensity of use of the platform by the viewers and not merely from their membership.

Therefore profit functions for the duopoly TV channels are

\[ \pi_1 = (\alpha_1 - \beta v_1 - \gamma v_2 - \delta a_1 - f_i) v_1 + (\mu v_1 - \theta a_1) a_1 - f_i \quad \& \]
\[ \pi_2 = (\alpha_2 - \beta v_2 - \gamma v_1 - \delta a_2 - f_i) v_2 + (\mu v_2 - \theta a_2) a_2 - f_i, \]

where, \( f_i \) is the fixed content cost of channel \( i \) calculated for a single period of subscription adjusted for the subscription fees collected from viewers during that period, \( i = 1, 2 \).

Each duopolist or television channel will try to maximize profit simultaneously treating viewing time of the other channel as given. Therefore, channel 1 will try to maximize \( \pi_1 \) with respect to \( v_1 \) and \( a_1 \) treating \( v_2 \) as fixed. Similarly, channel 2 will try to maximize \( \pi_2 \) with respect to \( v_2 \) and \( a_2 \) treating \( v_1 \) as fixed.

V. EQUILIBRIUM OUTCOMES

Simultaneous profit maximization by the two television channels will give the equilibrium outcomes of the model.

Profit function of channel 1 is
\[ \pi_1 = (\alpha_1 - \beta v_1 - \gamma v_2 - \delta a_1) v_1 + (\mu v_1 - \theta a_1) a_1 - f_i \]
Rearranging terms on the RHS, it becomes

\[ \pi_i = a_i v_1 - \beta v_i^2 - \gamma v_i v_2 + (\mu - \delta) v_i a_i - \theta a_i^2 - f_i \] .................................. (1)

Similarly, profit function of channel 2 is

\[ \pi_2 = a_2 v_2 - \beta v_2^2 - \gamma v_2 v_1 + (\mu - \delta) v_2 a_2 - \theta a_2^2 - f_2 \] .................................. (2)

Channel 1 tries to maximize (1) with respect to \( v_1 \) \& \( a_1 \), treating \( v_2 \) as fixed, whereas channel 2 tries to maximize (2) with respect to \( v_2 \) \& \( a_2 \), treating \( v_1 \) as fixed.

First order conditions for the maximization problem of channel i are

\[ \frac{\partial \pi_i}{\partial v_i} = a_i - 2\beta v_i - \gamma v_j + (\mu - \delta) a_i = 0 \] .................. (3)

\[ \frac{\partial \pi_i}{\partial a_i} = (\mu - \delta) v_i - 2 \theta a_i = 0 \] ........................................ (4), \( i,j=1,2; \ i \neq j \).

From equation (4),

\[ a_i = \frac{\mu - \delta}{2\theta} v_i \] ........................................ (5)

Putting this value in equation (3), \( v_i \) can be solved for \( a_i, \beta, \gamma, (\mu - \delta), \theta \) and \( v_j \). Putting that \( v_i \) value back in (5), \( a_i \) can be solved for \( a_i, \beta, \gamma, (\mu - \delta), \theta \) and \( v_j \). These values of \( v_i \) \& \( a_i \) will be profit maximizing values of \( v_i \) \& \( a_i \), i.e. \( v_i^* \) and \( a_i^* \) provided the following second order conditions are satisfied:

\[ \frac{\partial^2 \pi_i}{\partial v_i^2} < 0, \quad \frac{\partial^2 \pi_i}{\partial a_i^2} < 0 \quad \& \quad \frac{\partial^2 \pi_i}{\partial v_i^2} \frac{\partial^2 \pi_i}{\partial a_i \partial v_i} > 0 \]

Now, \( \frac{\partial^2 \pi_i}{\partial v_i^2} = -2\beta < 0 \quad \& \quad \frac{\partial^2 \pi_i}{\partial a_i^2} = 2\theta < 0 \).

\[
\frac{\partial^2 \pi_i}{\partial v_i^2} \frac{\partial^2 \pi_i}{\partial a_i \partial v_i} = \begin{vmatrix}
\partial^2 \pi_i \\
\partial v_i^2 \\
\partial a_i \partial v_i \\
\partial^2 \pi_i \\
\partial a_i^2 \\
\end{vmatrix} = \begin{vmatrix}
-2\beta & \mu - \delta \\
\mu - \delta & -2\theta \\
\end{vmatrix} = 4\theta - (\mu - \delta)^2
\]

4\( \beta \theta - (\mu - \delta)^2 \) > 0 can equivalently be stated as 4[\( \beta \theta - (\mu - \delta)/2 \)]^2 > 0. Effectively the condition becomes \( [\beta \theta - (\mu - \delta)/2] > 0 \).

In this model, \( (\mu - \delta)/2 \) can be interpreted as an average measure of cross-group network externality since, total externality effect that can be internalised by the platform is \( \mu - \delta \) and there are two sides of the platform. \( \mu \) reflects the strength of externality from the viewers’ side to the advertiser’s side and \( \delta \) reflects the strength of externality from the advertisers’ side to the viewers side. It is already mentioned that, for the majority of the viewers, \( \delta \) is negative largely dampening the positive externality \( \mu \). It is interesting to note that if \( \mu \) is exactly offset by \( \delta \), \( a_i^* \) becomes zero and the two-sided market structure ceases to exist. Therefore, in this situation the channels endogenously become pure pay channels. It is very unlikely that this happens for the whole set of viewers of those channels. In that case, channels have to identify that particular market segment where presence of advertisers does not add any benefit in terms of non internalised externality benefits.

Proposition 1: If \( \mu - \delta = 0 \), the two-sided platform endogenously becomes a single-sided platform.

Barring the above situation, it is most likely that \( \beta \theta \), the product of direct quantity sensitivities of prices on the two sides of the platform, will surpass the product of the indirect average network externality effect taken twice leading to the fulfilment of the required condition stated above. If for some reason, \( \delta \) is very low or it turns out to be positive for the category of viewers who like advertisements, there are chances that, \( \beta \theta - (\mu - \delta)/2 \) may turn out to be non-positive. In those
situations indirect externality effect is much stronger or is equal to direct quantity effects on prices. In that case advertisement turns out to be more saleable than the content. The platform can theoretically keep on increasing profit by increasing level of advertisement, rendering the concept of maximization of profit unviable. However, they have to stop in practice either for the supply constraint of advertisement or for the regulatory measure about maximum level of advertisement on a channel per hour of programming, whichever is coming earlier. If the constraining factor is the regulatory measure, then new entrant can reap the benefit if entry barrier is not there. Entry barrier may appear in the form of huge content cost which is a sunk cost or brand value of the existing players. Neither appears very strong when the situation is such that content is less saleable than advertisements. In fact this situation may happen if the channels are broadcasting programmes of ‘lowest common denominator’ sort and at the same time to the advertisers, television is the best medium to advertise.

Proposition 2: When advertisement is more lucrative than content in a particular channel category, existing channels can increase their profits by increasing level of advertisements until stopped either by advertisement supply constraint or regulatory measure on maximum level of advertisement and if stopped by the second reason, new entrants can do good business unless they are thwarted by the existing players by some unfair means.

Given that the second order conditions are satisfied, the first order conditions of the two channels taken together will give two equations in \( v_1 \) and \( v_2 \) (eliminating \( a_1 \) & \( a_2 \)) using (5).

The equations are

\[
\begin{align*}
2\beta - (\mu - \delta)^2 / 20 \cdot v_1 &+ \gamma \cdot v_2 = a_1 \\
\gamma \cdot v_1 &+ [2\beta - (\mu - \delta)^2 / 20] \cdot v_2 = a_2
\end{align*}
\]

Therefore in vector-matrix form these two equations become

\[
\begin{bmatrix}
2\beta - (\mu - \delta)^2 / 20 & \gamma \\
\gamma & 2\beta - (\mu - \delta)^2 / 20
\end{bmatrix}
\begin{bmatrix}
v_1^* \\
v_2^*
\end{bmatrix} = \begin{bmatrix}
a_1 \\
a_2
\end{bmatrix}
\]

Applying Cramer’s rule, \( v_1 \) and \( v_2 \) can be solved provided,

\[
\begin{bmatrix}
2\beta - (\mu - \delta)^2 / 20 & \gamma \\
\gamma & 2\beta - (\mu - \delta)^2 / 20
\end{bmatrix}
\]

is non-vanishing.

This requires \( [2\beta - (\mu - \delta)^2 / 20]^2 - \gamma^2 \) to be non-vanishing. This expression can further be reduced to \([\beta \theta - \{(\mu - \delta) / 2\}]^2 \).\( [4/\theta^2 - \gamma^2] / [\beta \theta - \{(\mu - \delta) / 2\}]^2 \). Effectively, \([\beta \theta - \{(\mu - \delta) / 2\}]^2 \) \( [2/0 + \gamma / [\beta \theta - \{(\mu - \delta) / 2\}]^2] \) has to be non-vanishing. \( \beta \theta - \{(\mu - \delta) / 2\} \) is always assumed to be positive barring a few exceptional cases. \( \gamma / [\beta \theta - \{(\mu - \delta) / 2\}]^2 \) can be interpreted as a measure of product differentiation, the value of which lies between 0 and 1. \( \gamma \) reflects strength of cross quantity sensitivity of viewer price only, as to the advertisers, differentiation is immaterial. The denominator reflects, as mentioned above, direct own quantity sensitivities of prices on both sides of the platform net of indirect cross group externality effect. Therefore, \( \gamma / [\beta \theta - \{(\mu - \delta) / 2\}]^2 \rightarrow 0 \) as the channels become more and more differentiated as perceived by the viewer. On the contrary, \( \gamma / [\beta \theta - \{(\mu - \delta) / 2\}]^2 \rightarrow 1 \) when the channels become closer substitutes of each other. Next, 0, the own quantity sensitivity of advertiser price cannot be very high, since network externality plays a bigger role in that respect. So \( 2/0 \), in all probabilities will be greater than 1. Therefore it is intuitively very clear that \( 2/\theta - \gamma / [\beta \theta - \{(\mu - \delta) / 2\}]^2 \) will be positive.

Given that \( [\beta \theta - \{(\mu - \delta) / 2\}]^2 > 0 \), the first two terms are positive. So the third term has to be non-vanishing. If this condition is satisfied, then the following solution values will be obtained.

Profit maximizing values of viewing hours for the two channels are...
The value of a channel is determined by programme quality. If 

\[ \beta \theta > 1 \]

in the above situation, channel i may survive. If \( \beta \theta \) values are very different, those varieties or start liking new programmes introduced on that channel.

Different combinations of values of \( \beta \theta \) and \( \alpha \) yield different results for \( v_i \). One combination is considered above where \( \beta \theta \) is close to 1 and \( \alpha \) is much greater than 1.

If \( \beta \theta \) is close to 1 and also \( \alpha \) is close to 1, then \( v_i \) will be non-positive. It implies that, if channels are not much differentiated and viewers have very low intrinsic value for a channel compared to its rival, then the channel with very low intrinsic value will cease to exist and the platform will endogenously become a monopoly platform. At this point a clarification is required about the difference between product differentiation and intrinsic values of the channels. Channels are considered to be differentiated in terms of programme variety in that particular genre whereas in most of the cases intrinsic value of a channel is determined by programme quality.

Brand value of a channel may play an important role in the context of channel quality to the viewers. It may also be determined by programme variety if some varieties are available on that channel only and not on the rival channel. Quality in those cases may not matter much if viewers have prior demand for those varieties or start liking new programmes introduced on that channel. Different combinations of
Proposition 3: (i) When the television channels have dissimilar intrinsic values to the viewers, low product differentiation will make the channel with lower intrinsic value unviable and the platform will endogenously become a monopoly platform. 
(ii) When the television channels have similar intrinsic values to the viewers, increased differentiation may or may not be profitable for the channels.

VI. CONCLUSION
This paper deals with a duopoly market with two commercial television channels broadcasting differentiated programme mix in the short run to shed light on future marketing strategies of the broadcasters after complete implementation of digital addressable system of cable distribution in India. On both sides of the market, quantity competition is considered. Market is defined for a particular category of television channels, where category is defined on the basis of programme type and language of communication. Cross category competition is avoided here. The existing framework can be extended allowing for more than two competing channels in a category and cross category channel competition. Also price competition can be introduced on any one or both sides of the channels if market realities demand so. Within the given framework, if intrinsic values of the channels to the viewers are very close, product differentiation may or may not pay in terms of profits. This conclusion is different from that of a single-sided duopoly model of product differentiation where more and more differentiation surely increases profits of both the firms and each firm in effect becomes a monopoly. In the present framework, one of the duopoly firms may become a monopolist in the particular cross category if viewers attach more intrinsic value to the channel’s programme mix compared to its competitor where product differentiation is low. Therefore, to survive in this situation and to retain competition, the channel with lower intrinsic value has to increase product variety leading to higher differentiation. Lastly, it has to be kept in mind that television industry is gradually witnessing a situation where ‘broadcasting’ and ‘narrowcasting’ exist side by side. Niche channels coexist with general entertainment channels. India is no exception to that trend. Niche channels are mostly monopoly platforms and can be made pure pay channels if committed viewers exist in numbers. If cross category competition is to be allowed for, a comprehensive framework accommodating both types has to be devised so that it can more effectively resemble the television industry.

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