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**ABSTRACT**

A study gathered information from "Variety" about production costs and final 32-week season ratings for prime-time series in order to determine what effect ratings have on whether a program is cancelled. The cancellation threshold against which these series could be judged was based upon final regular-season Nielsen ratings information. The data indicated that high production costs tend to raise the cancellation threshold, while higher revenues tend to lower it. Networks have recently renewed programs with ratings that would have marked the programs for cancellation ten years ago. This trend suggests that networks no longer have the ability or the desire to attain the rating shares they held in the early 1970s. One theory is that increases in the absolute number of TV households make each rating point more valuable, thus helping sustain network revenues in the face of competition from new technologies, and overwhelming the cost increases over time and lowering the threshold of cancellation. References, tables, and figures are appended. (DF)

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THE CANCELLATION OF PRIME-TIME NETWORK PROGRAMS: CHANGING RESPONSES TO COSTS, REVENUES AND NEW TECHNOLOGIES

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## ABSTRACT

### THE CANCELLATION OF PRIME-TIME NETWORK PROGRAMS: CHANGING RESPONSES TO COSTS, REVENUES AND NEW TECHNOLOGIES

Media analysts and advertisers increasingly express concern that TV program audiences may be fragmented by such new video players as cable and videocassette recorders. But, given these prospects for competition, have the networks adopted a new set of standards for program renewal and cancellation?

This paper presents a model to ascertain the "critical-mass" in rating points required to facilitate renewal of prime-time network programs. The time interval under examination, 1971 to 1985, should reflect the impact of competition from new video sources. Specific emphasis will be placed on a financial model incorporating revenue levels needed to offset such program costs as advertising agency commissions, affiliate compensation, and network overhead as well as program production and distribution expenditures. According to the model, cost increases raise the threshold, while higher revenues lower it. These threshold influences are cast with regard to both individual programs and a comparative static equilibria for all of network TV.

Our findings suggest that these factors have dramatically influenced this "cancellation threshold" over time. The networks have recently renewed programs with ratings which, ten years ago, might have marked them for cancellation. This increased patience with lower rated programming suggests that the networks no longer have the ability or desire to attain the rating shares they had known in the early 1970s. But declines in ratings do not necessarily bode ill for the networks. Rather, increases in the absolute number of TV households, rendering each rating point more valuable, have helped sustain network revenues in the face of competition from new technologies. This revenue effect has overwhelmed cost increases over time, thereby lowering the threshold of cancellation.

THE CANCELLATION OF PRIME-TIME NETWORK PROGRAMS: CHANGING  
RESPONSES TO COSTS, REVENUES AND NEW TECHNOLOGIES

Media analysts and advertisers increasingly express concern that TV program audiences may be fragmented by such new video players as cable and videocassette recorders. Would-be doomsayers need only point to recent declines in aggregate network rating trends in order to substantiate their case that the broadcast bonanza has, in fact, diminished. The days of the homogeneous mass audience, it seems, are numbered. And while commercial broadcasting remains profitable, the recent downward trends in ratings across all dayparts cannot be ignored and raise many questions as to the future prospects for the networks.

For instance, how do the networks make use of ratings data when deciding whether to cancel or renew a program? And how has this standard changed over time in response to competitive shocks from outside as well as within the television industry? These factors are, in large measure, determined by economic variables.

While commercial network television is not the largest sector of the U.S. economy, or even among the most competitive, few industries can match its volatility in one key aspect--the nonprice spectacle of ratings competition.<sup>1</sup> This broadcast industry is unique in the fact that there is a "short-circuiting" of the program market, as consumers express their preference through ratings rather than explicit patronage of market products (see 7). As Botien (3) notes:

...the broadcasting industry presents great profit opportunities if a program earns ratings popularity; but it can result in great losses if a program does not reach the break-even point (p. 10).

This paper will present a model to ascertain the "critical-

mass" in rating points required to facilitate renewal of prime-time network programs. The time interval under examination, 1971 to 1986, should reflect the networks' accommodation to recent changes in their competitive environment as well as their historic period of dominance. Specific emphasis will be placed on a financial model incorporating revenue levels needed to offset such program costs as advertising agency commissions, affiliate compensation, and network overhead in addition to program production and distribution expenditures.

Of course, analysis of these economic variables is complicated by concerns regarding the "public interest, convenience and necessity" specific to broadcasting (12). Owen (8) sees this public interest element compromised by profit motives that "produce less diversity and more wasteful duplication than is socially optimal" (p.107). However, assuming arguendo that ratings do provide a partial indicator of consumer sovereignty, then this public interest standard is compromised when lower-rated programs are renewed while relatively well-rated programs are cancelled. So this "ratings game" is worthy of academic study because, for better or worse, it subsumes important elements of the public interest in broadcasting.

Litman (5) notes the significance of this ratings feedback, suggesting that the network ratings leader receives supplemental profit "winnings" while the loser is generally held up to public disgrace. Despite the competitive image presented for this ratings game, he and others stress the underlying lack of competition which characterizes the network triopoly. Dominick and Pearce (4), when searching for evidence of oligopolistic

conduct, find the networks acted in a uniform and interdependent manner in the area of programming. Specifically, coordinated profit maximizing conduct foretold an increase in homogeneity and decrease in diversity among program formats from 1953 to 1974, a period of network cooperation and rising profits.

Subsequent analysis of this link between competition and diversity by Litman (5) reveals that this association works in both directions, as program diversity increased while profitability declined during a period of heightened competition in the late 1970s. More recently, Wakshlag and Adam's (14) content analysis confirms the results of these previous studies and suggests that the networks may have restored their earlier equilibrium, diversity having returned to its relatively low pre-1975 level.

While these diversity analyses gauge the networks' audience maximizing behavior, the contention that ratings are a sole predictor of program renewal was overturned in an examination of the 1974-1979 seasons by Adams, Eastman, Horney and Popovich (1). Finding support for public criticisms of TV scheduling, they note instances where established "successful" programs (i. e. those receiving ratings above the category mean of 20) were cancelled.

Examples included shows whose schedules were manipulated or otherwise placed against stiff "death slot" opposition. While no formal threshold was articulated, they find that few series receiving a rating below a 15 were renewed. Moreover, even they finally admit that: "subject matter and cost may be the main reasons series are cancelled, even when ratings are publicly given the blame" (1, p. 23).

Suggesting that anti-violence campaigns in the early 70s may

have contributed to the decline of action/adventure series, they further note this genre was also influenced by purely economic concerns, as

the networks made more advertising profits from those reruns than they would have made from more original episodes of the same series (due to higher production fees) [1, p. 21].

This occurs because production costs are sunk for reruns, and the networks need only pay "residuals" to creative talent. Therefore, while schedule manipulation and political factors may occasionally affect the ratings game, profit and loss considerations must, perforce, play a central role and be the primary explanatory factor.

The previously cited articles, then, empirically demonstrate that profits vary in accordance with cycles of network competition which, in turn, influence programming decisions. Given the constrained latitude for conduct, a key related question is, do the networks observe similar standards in program cost and renewal practices? And, if so, to what extent has this standard (expressed in rating points) changed over time? Owen (8) suggests that the network "rivalry" is complicated by a wide variety of factors which can be varied to facilitate competition or cooperation. He and others note that ratings represent one of the few areas where this competition becomes apparent. Other financial components of that rivalry, to be separately addressed in this model, were enumerated by Litman (6):

The networks have the long-run profit maximizing incentive to cooperate with each other rather than to maintain an adversarial relationship and fight for temporary gains in market shares. The areas for cooperation will be those which are visible, easy to manipulate, easy to detect cheating on agreed-upon standards and of substantial financial importance. They include advertising prices, program input costs, affiliation payments and the number of commercial minutes per hour

However, program quality and scheduling are not so easily identifiable or measurable, and hence these areas have become the escape valve for competition within the industry (p. 397). {emphasis added}.

These revenue and cost components will be incorporated into a comprehensive model which argues that the critical mass of ratings--the "threshold of cancellation"--has declined over time in response to a series of industry trends and developments, especially in the areas of production and affiliate compensation. Given that outside competition for programming and audiences from new technologies (chiefly VCRs and cable TV) have eroded network audience shares (see 6), associated losses in revenue undoubtedly have been offset by increases in advertising prices and/or home TV penetration. Both of these factors render remaining network ratings points more valuable.

Therefore, in a dynamic sense, these factors are hypothesized to have affected the breakeven or normal profit point which we term the "threshold of cancellation." This model will show how increased revenues place a downward force on the cancellation threshold, while cost increases provide a restorative upward force. However, both the ratings and the cost/revenue components to which they are related are critically dependent on the number of TV households in the U.S at any time. Should TV household growth match that of costs, the threshold will remain constant; if this number rises faster than costs, the threshold rating would actually fall. The model suggests that revenue increases have outstripped cost increases, thus pushing down the threshold of cancellation. That is, cost increases in such areas as production, affiliate compensation and competition for audiences have



been offset by revenue increases motivated by higher TV household penetration levels.

The first part of the model considers these threshold components with regard to specific programs. From there, the second part will extend this threshold concept to a comparative static equilibrium analysis for all of network TV. To do so, we must consider categorical program traits such as whether the show is a rerun, special, film, or particular format type. It would then be possible to trace the manner in which changes in any or all of these variables influence costs and ratings. That is, using program-type information, one can explain how the average show in a certain category might be influenced by cancellation thresholds.

For instance, single season threshold values may be contingent upon whether a program is a rerun or original episode. The fact that reruns are much cheaper to air might mean that the networks would continue to show them even if they receive ratings below the general threshold. One can apply yearly trend information regarding this or any of the other characteristics to construct a comparative static model. The sorting out of such centrifugal and centripetal pressures on the "threshold" is the heart of the analysis which follows.

#### REVENUES, COSTS AND THE RATINGS

To explain the rationale of this process, we begin by assuming that each of the networks will operate in a profit maximizing fashion. One must further assume that Nielsen TV ratings are the primary gauge of program rivalry and hence a determinant of advertising prices. The networks will likely observe comparable cancellation thresholds given the rather uniform nature of the

input costs the other way, to say nothing of their oligopolistic interdependence. More specifically, a network will cancel a series if the associated production and other hourly program costs continue to exceed the net advertising revenues and, especially if the show demonstrates little prospect for improvement. Any program generating a rating below that would place the network in an area of economic losses for that time period, and thus not prove worthy of renewal, from a profit standpoint. The opposite is, of course, true for more highly rated programs, holding all other factors constant.

Whereas Adams et al note "there is almost no chance of a program's survival if it has a rating less than 15" for the time period 1974-1979 (1, p. 22), it seems untenable that this or any other facet of the ratings game would remain static over time. Hence, rather than examine how ratings are determined, this comparative equilibrium model focuses upon the process by which they have changed in response to financial variables since 1971.

The year 1971 was selected as a beginning point because it represents the tail end of an era of virtually unchallenged network television dominance. Moreover, 1971 was an important time in terms of policy development, witnessing the implementation of the Prime Time Access Rule (10). Only one year earlier, the FCC had enacted a ban on televised cigarette advertising.

#### Program Costs

During the first third of the fifteen year cycle under examination, the networks slowed cost increases in this area by enforcing a step buying process which effectively tied producers

to a single network, thereby preventing competitive bidding on hit programs during the customary 5-7 year contract periods.

Since the passing of the early era, inter-network rivalry and new program services have precipitated widespread inflation including more frequent contract renegotiations. Interestingly, this model suggests that highly rated programs whose contracts have been generously renegotiated will often be cancelled--even after earning ratings which are otherwise "acceptable."

Concurrent with the network rivalry of the 1970s was a trend toward dramatic increases in affiliate compensation payments (i. e. network payments to their affiliates for the clearance of time for programming). Where the networks had only years earlier been able to dominate their affiliates, after 1976, they had to share more of their profits with affiliates in order to stave off competition from new program sources and each other (5). While these cost increases paralleled those of the production area for a time in the late 1970s, they seem to have stabilized. Regrettably, the FCC no longer collects such data, so inferences in this area are somewhat speculative. But the recent slowing of affiliate "defections" from one network to another suggests that rivalry has subsided.

Factored into those affiliate compensation payments are inter-connection costs. This component has, since 1981, been increasing restructured around satellite rather than the AT&T terrestrial transmission systems for each network. While technical factors may have influenced this move, our model presumes that the networks save money in making the switch (once construction costs are met). Here again, timely data are largely proprietary. But figures from

the early 1970s suggest that the network demand for these services was deemed inelastic by AT&T, as network operations often subsidized dramatically cheaper rates for occasional "independent" network users. Even as early as 1972, the networks were charged \$82.50/mile/month underground (costing each about \$20 million dollars annually where, by comparison, satellite transponder costs range below \$100,000/month)[see 13, p. 39]. Nevertheless, despite this singular countertrend in costs, overall costs have risen dramatically.

### Network Revenues

The importance of ratings success as a determinant of advertising prices was recently underscored by an industry spokesman who noted that an increase of one national rating point/season can generate \$55,000,000 in added revenues for a network (11). Despite this variability, specific components of advertising income such as cost per thousand and number of commercial minutes per prime-time hour should remain fixed over the short run of a single season. Each such season comprises the unit of analysis for the long-run 15 year trend.

Also fixed over the seasonal short run is the hourly gross advertising revenue (G.A.R.). This component can be defined as the price per 30-second spot times the number of spots sold. The implementation of the Prime Time Access Rule (PTAR) in 1971 eliminated one-half hour of network programming per night, thereby rendering commercial minutes more precious.<sup>2</sup> Despite the lower number of total minutes sold, advertising revenues have continued to grow. This is evidenced by increasing commercial prices per

minute, which have doubled during the last decade (2).

This G.A.R. is related to network revenues (N.R.), which represents G.A.R. after the standard 15% advertising agency commission. The network revenue picture may be influenced by the removal of the National Association of Broadcasters (NAB) TV Code's 6 minute per hour limit on prime-time commercials in 1982. Wicks and Litman (15) find that this number has increased slightly since that time, up to nearly 6.5 minutes. This supply of advertisements was further increased in 1985, as the networks offered "split 30's" (i.e. with two 15-second messages) and finally CBS's initiation of isolated 15's" on a selective basis (15).

As an important revenue component, this advertising income would exert a downward force on the ratings standard networks consult in deciding whether to cancel or renew a program. That is, if all other factors are held constant, higher revenues mean that a lower threshold (or normal profit) would now be needed.

Outside of the network realm, audiences and advertisers have been diverted by external competition from the barter syndication market, independent TV stations, and cable. The network's collective market share has diminished from an all-time high of 92% in the early 1970s down to 76% in 1985; should this trend continue the network share could drop as low as 60% by 1990 (9). This may, however, be offset by a concomittant increase in the number of Nielsen households, which has grown from about 60 million to almost 86 million during the last two decades.

Thus profits and ratings can be expected to change over time. While increased advertising revenues and commercial minutes will increase profitability, increases in production costs and related

expenses will decrease profits. Since 1975, network expenditures have been approaching network revenues, squeezing the profit margin and causing a marked decline in profits from 1978-80 and a clear reversal of their expansionary growth of the early 1970s.<sup>3</sup> The question is, how have these factors, taken together, influenced the threshold of cancellation over time?

#### Cost and Revenue Implications for Ratings

Figure 1 depicts the relation between the break-even point with cost/revenue factors and the threshold of cancellation.<sup>4</sup>

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Figure 1 about here  
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Assume that the threshold is the rating associated with the minimum number of households necessary to earn a normal profit. As some of the previously cited authors note, shows with ratings falling below the threshold of cancellation do not pay their way and are hence uncelled. Shows above that level earn excess profits and are likely to be renewed.

As total costs increase from season to season, all things considered equal, the number of households needed to "break-even" increases because networks must generate more revenue to cover additional costs. Thus, over time, rising costs may force the networks to maximize their audiences, motivating a higher absolute number threshold. This relationship is represented in figure 2.1.

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Figure 2.1 about ere  
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Contrary to costs, rising revenues should have the opposite effect on this threshold number. As revenues increase, all other factors held constant, the networks will not need as great a proportion of the audience to garner profits. This relationship is

represented in figure 2.2.

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Figure 2.2 about here  
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The revenue growth facilitating this lower threshold could come from two sources: (1) an increase in the price per advertising spot, where advertisers are willing to pay a higher cost per thousand households when presenting their messages, or (2) increases in the number of thirty-second advertisements per hour, allowing more opportunities to sell time. Each of these processes causes the G.A.R. and N.R. curves to rotate upward. All things considered equal, the higher revenues suggest that a lower threshold (or normal profit) will be needed to sustain operations.

Given these two mechanisms for revenue increases, the question is, which played a larger role in maintaining network profits during the criterion time period? The earlier mentioned half-minute increase in commercial time per hour is not significant enough to offset vast cost increases. Therefore, the bulk of network revenue growth has accrued from increases in advertising spot prices. This growth has continued through the 1980s--even in the face of declining network audience shares.

The most likely catalyst for this advertising price increase lies in the growth of TV household penetration, up 40% during the criterion time period. Table 1 details this growth.

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Table 1 about here  
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Thus, declines in audience shares do not, according to this model, necessarily translate into lower profits.

To explain this phenomena, one can express the threshold in relative terms as a rating that is theoretically dependent on the number of TV homes within the U.S. at any time. When this latter

figure increases, the actual proportion of TV homes tuned in to a particular show will not need to be as large in order to achieve the absolute threshold. Therefore, in examples 2.1 and 2.2, as the threshold number of households rises (2.1), and falls (2.2), it is important to consider any dynamic changes in the absolute number of U.S. TV households which comprise those ratings percentages. If the number of U.S. TV households rises by the same proportion as HH\* (threshold) rises in 2.1, the threshold rating remains unchanged; if that TV household number increases faster than costs, threshold ratings can actually fall.

For instance, in figure 2.2, the trend toward a rising number of TV households will combine with the downward trend in threshold households, thereby yielding a lower threshold rating. The lower ratings, in this case, do not imply that the number of viewers will be lower. Rather, the number of households represented by each rating point will be greater. So, despite reduced ratings, advertisers are still reaching a good number of households for their money. TV household growth rates which exceed those of the ratings will place a downward force on the ratings thresholds.

### Reruns

Owen (8) suggests that the networks agree to a common rerun policy to ensure that programming expenses do not erode profits. Litman (6) provides support for this contention, showing that one of the responses of the U.S. TV networks to new technologies has been to air less original programming and more reruns. Table 2 details this trend.

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Table 2 about here  
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The proportion of original network programming peaked during the period of network rivalry in the late 1970s. With the slowing of rivalry in the 1980s, we've seen a reduction in original programming and greater reliance upon reruns. Trends favoring reruns, or any other type of low cost programming, would place a downward force on the cancellation threshold.

One might expect that reruns would generate lower ratings, as there are generally fewer households watching during the Spring and Summer months during which they are shown, to say nothing of the general audience distaste which they might invite. But, does this mean that the networks lose money by showing reruns? According to our model, no. For, losses in audience-related advertising revenue are more than offset by savings in production costs, which have already been met (7). Of course, residual payments (approximately equal to a quarter of the original production costs) represent an added cost. But these are still more than offset by production savings, which are translated into excess profit for series that turned a profit during their initial run. This cost reduction is represented below in figure 2.3.

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Figure 2.3 about here  
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### Returning Programs

The model predicts that returning shows should have a somewhat higher renewal threshold than new series. The impetus for this higher performance standard lies in the fact that such programs are typically more expensive to produce. After the initial contract run has expired, actors and producers may renegotiate more lucrative terms over subsequent seasons. Thus, a more expensive

program would require relatively strong viewership in order to "pay its way." Only a very few programs can sustain such popularity beyond a 5-10 year period. Series longevity is threatened when successful writing teams are split up or program stars tire of their roles. In this way, minor fluctuations owing to developments with spin-off series might influence the trend for threshold ratings among criterion series which have been renewed. Table 3 details trends in the number of new series offered each fall season.

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Table 3 about here  
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While the percentage of new versus renewed series has fluctuated, we've seen a general increase in the proportion of new programs. This trend roughly parallels increases in original programming during the period of network experimentation and rivalry during the late 1970s. The total number of series units has also increased, though recent trends suggest a decline from peak levels in the late 1970s. This decrease in renewed programs, and accompanying cost reductions, would place a downward force on the cancellation threshold.

#### METHOD

In terms of programming, information was gathered about production costs and final 52-week season ratings for prime-time series from Variety. Specifically excluded from analysis were (1) shows cancelled at the planned ending of their product cycles (e.g., "retired" programs such as M\*A\*S\*H); (2) movies, sports, miniseries or specials, and (3) "short-run" series or replacements  
6  
aired fewer than 5 times.

The cancellation threshold against which these series could

be judged was based upon final regular season Nielsen ratings information. Ideally, a threshold could be defined as the rating point above which all programs are renewed and below which all are cancelled. But, since factors other than ratings or profit maximization influence renewal decisions, the data are not black and white; hence measures of central tendency (i. e. mean) are not fully explanatory. So we have developed a threshold measure that can, if needed, be divided into two sub-components--a threshold of cancellation and a threshold of renewal. In order to enhance their explanatory power, it becomes necessary to construct each around flexible rather than absolute intervals. Hence the threshold of renewal can be defined as the lowest point above which 90% of the programs listed are renewed for any year. Conversely, the threshold of cancellation is the highest point which the same proportion of programs are cancelled.

These components could be inscribed by a single fraction of a ratings point (e.g., 17.1) as well as a relatively narrow or wide range, depending on the nature and frequency of outlying program (non) renewals. This area of overlap will be termed "the range of uncertainty," because programs falling within it will have moderate prospects for renewal. A relatively wide range would accompany periods where renewal and/or cancellation decisions are arrived at in a rather non-uniform manner. The opposite is true of shorter ranges. As an extra measure of robustness, median rating values will be computed for each year.

#### FINDINGS

Our examination found that both threshold and median values did, in fact, change over time in the downward direction

predicted by the model.

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Figure 3 about here  
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As the graph in figure 3 indicates, the decline in ratings thresholds became most pronounced after the 1975-76 season, coinciding closely with the period of network competition. During the early 1970s, the line of demarcation between strong renewal candidates and others (i.e. the threshold of renewal) hovered at a rating level of 18. The threshold of cancellation--below which few programs could expect to survive--was generally no more than a point or two lower during that time period. Table 4 details these data points.

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Table 4 about here  
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Rather interesting is the fact that 75% of the 1971-72 series surpassed the 1985 standards for renewal; only half a dozen of those shows would have been below the 1985 cancellation threshold. Since the ratings are a relative rather than an absolute indicator, this illustration is not fully descriptive in the context of a single season. But it does dramatize the tremendous downward shift in ratings standards which has occurred over time. Median values across the entire sample have likewise declined during this period, from the mid-18s to the mid 14s (see column 3 of Table 4).

The general downward trend among these numbers is marked by short-term discontinuities which correspond closely to events affecting the major cost and revenue variables of interest. This is especially true for the production cost and advertising revenue factor areas.

### Reruns and Renewed Programs

When the networks held costs down by showing more reruns in the early 1970s, the general cancellation threshold was relatively high; the subsequent threshold peak toward the end of that decade coincided with a decline in reruns. Recall that such cost increases would, in isolation, push up ratings thresholds. On face of things, it appears the model does not explain this rerun activity. However, taken in the context of other threshold influences, it may well be that these slight changes in rerun vs. original programming were simply outweighed by the more pervasive revenue growth.

This is not to imply that all cost areas increased. As the earlier discussion on renewed versus new programs suggests, the proliferation of less expensive new series parallels a decline in the overall ratings threshold. Moreover, the median rating of renewed programs trended in roughly the same downward pattern as that for all programs. For most every year, the rating of renewed programs was 2.5 to 3.5 points higher than than the median for all programs, and about 4 points higher than the cancellation thresholds. Table 4 shows that the median rating for renewed programs was just over 21 in 1971. By 1985 it had trended, with some fluctuation, down to a rating of 17.

For renewed programs, the difference between the median rating and cancellation threshold represents the margin of profits (expressed in terms of ratings) for the networks. The relative stability of this difference margin demonstrates the financial viability and survivability of the networks, even in the face of major competitive threats from outside their realm.

## PROGRAM EXPENDITURES

As table 2 shows, production costs have mushroomed since 1975, continuing to escalate even though the period of intra-network rivalry which spawned them has subsided in other areas. The costs for an average hour of prime-time among programs analyzed have nearly tripled during the time frame. In terms of ratings, it appears as if the networks were, from 1976 to 1980, able to bid up costs and ratings through these production extravagancies. During this time costs increased faster than households. As competition settled in the 1980s, so too did the ratings thresholds.

The median values corresponded relatively closely ( $\pm 1.5$  points) to the thresholds. In the early 1970s, when it wasn't unusual to see ratings ranging from 25-35, the median was pulled above both thresholds. However, in the late 1970s, as lower extreme ratings became more prevalent, the median was found alongside or below them.

Adams et al.'s assertion that series with a rating below 15 have virtually no chance of renewal held true, with few exceptions, beyond their 1974-1979 period of analysis on through the 1982-83 season. Each of the exceptions we discovered prior to 1982 had below-average production costs; they include Real People (14.8 rating in 1979), NBC Reports (12.3 in 1974) and NBC Magazine (8.1 in 1981). Furthermore, these latter two programs may have been attractive renewal candidates because they fulfilled presumed public service obligations in addition to being among the cheapest to produce. It should be recalled that lower production costs imply a lower threshold of renewal since fewer households are

needed to generate sufficient revenues for the network to cover costs and break even. But after 1982 this range was no longer the domain of production loss leaders and news programs. From 1982-1985, the number of renewed programs scoring in this range was more than triple the sum of all such programs from the previous 10 seasons. This suggests a declining threshold value over time as explained by the model.

On the opposite side of the cost spectrum, we examined the "expensive" series Adams et. al noted had been cancelled despite receiving "above average" ratings. Since averages can be skewed towards outliers, we compared them against our thresholds. Each program was, in fact, above the threshold of renewal. We also examined the programs they noted had, when cancelled, generated a great deal of public outcry. While each was above the renewal threshold, only seven of these ten programs ranged above the cancellation threshold.<sup>7</sup> Therefore, this current evidence does confirm the findings of Adams et al. concerning non-economic factors associated with cancellation.

Some recent examples of highly rated programs which were cancelled include "The Waltons" and "Lobo" (18.4 and 18.3 ratings in 1981) and "House Calls" (19.2 in 1982). Each of these was well above average in production costs. The cancellation of "Lou Grant," (16.6 in 1982) has been criticized for being politically motivated. However, the program had actually trended downwards 3 points over the previous two years into the range of uncertainty --just below the renewal threshold, and 1.5 points above the cancellation threshold.

More generally, in terms of format categories, the networks

have not been able to hurdle the step acquisition process. It appears that the networks cannot restore this braking mechanism and escape the competitive spiral they initiated in the late 1970s, as cheaper variety and sit-com formats were absent from the top 10 after the 1981-82 season (though the latter made a mild resurgence in 1985). Instead we see an addiction to costly action-adventure series, produced on film rather than tape, increasingly represented above the threshold since 1980. This parallels the earlier noted trend toward costly made-for TV movies and miniseries--productions which usually are dependent upon foreign coproduction and distribution to recoup costs (9).

For now, these production techniques have allowed the networks to maintain their audience quantities, though cable TV is now pursuing some of the higher quality demographics. It will be interesting to see how this and other competitive distribution technologies influence the threshold in the future.

#### ADVERTISING REVENUES

Again, operating on the assumption that greater revenues might be cycled back into the ratings process through more extravagant productions, one might argue that increased advertising revenues could prompt the networks to be less vigilant in their cost controls. Fortunately for the networks, advertising revenue was sufficient to cover costs, even while ratings were falling over time; the increase in TV households continued to make the network ratings look attractive to advertisers. When combined with other revenue factors and interconnection cost reductions, this helped push down the ratings threshold.



## NEW TECHNOLOGIES

The previous literature and results of the study to this point suggest that the period of rivalrous behavior which slowed the decline in the ratings threshold along with profits was, nevertheless a product of the network's own volition. Why, then, would the cessation of this behavior not portend a resurgence of network prosperity?

Ironically for the networks, outside technologies increased their penetration during this period of competition in the late 1970s, (see table 1), providing the industry with yet another competitive shock at a time when the networks were ready to resume their "quiet life" of oligopolistic cooperation in the 1980s (6). While competitors such as cable and VCRs (now at nearly 50% and 30% penetration, respectively) may not have initiated the changes in the threshold, they have played a contributory role in holding down the median ratings of renewed series. It would seem that outside competition has caused the networks to lower their ratings expectations, causing a non-profit maximizing adjustment.

Cable is now in roughly five times as many houses as it was in 1971. Indeed, its primary strength is in garnering viewers--not advertising. <sup>8</sup> Nonetheless, pay as well as basic programmers have likely played a role in bidding up prices for program inputs, and fractionalizing audiences, further exacerbating the threshold decline noted in Table 4. Again, while these cost increases might normally cause the threshold to increase, household growth seems to have generated adequate revenue to counteract that trend; rather than bid up program costs further in order to retain previous shares, the networks are content to garner lower ratings.

In terms of specific program behaviors, the networks seem to be more patient with "losers" than they had in the past, as evidenced by the retention of more shows with sub 15 ratings. Among those below the threshold of cancellation which have been renewed, we round the following programs. Hill Street Blues (13.3 in 1980-81); "Cagney and Lacey" and "Simon and Simon" (rated at 15.2 and 14.3 in 1981-82); "St. Elsewhere" and "Gimmie a Break" (13.3 and 14.2 in 1982-83); Airwolf (14.3 in 1983-84); and "Punky Brewster" and "Hunter" (11.2 and 11.6 in 1984-85). These were each examples of new series which were retained despite poor ratings; for each year, the vast majority of such programs were cancelled (obviating the need to calculate separate thresholds for each).

Again, this heretofore unheard of patience with potential flop series can be viewed as a logical network accommodation to their new competitive situation. The networks simply cannot afford to produce the extravagant programming needed to woo back cable audiences. Moreover, the networks may be haunted by discarded series which are syndicated (e.g. Fame, Too Close for Comfort). Syndicators have, in an effort to enhance the marketability of these cancelled series, begun to produce additional episodes. This practice is typically applied to series which have been aired for a couple of years rather than new series.

Given these developments in the area of program inputs and viewing, two future scenarios seem likely. In the first, competition from new programming causes an erosion extending beyond the realm of rating points and diminishing the actual size of network audiences. This would likely trigger an upward spiral in

the threshold, as network program offerings would deteriorate for want of sufficient advertising to cover production costs. At some point, the threshold and median for renewed series would coalesce, yielding only normal overall profits.

In the more positive scenario, the networks could utilize new technologies themselves, using satellite distribution to broadcast directly to homes. Such a move would circumvent costly affiliate payments, thereby freeing up more revenue for program production. The networks would then have an opportunity to "buy" back some of their audiences (or at least maintain their position) by generating higher-gloss programming.

#### CONCLUSION

This paper advances a model of network program renewal and cancellation behavior in relation to selected cost and revenue variables. According to the model, higher costs alone exert an upward force on the cancellation thresholds, while higher revenues generate a downward influence. Over time, revenue increases have outstripped cost increases, thus pushing down the threshold of cancellation. The motive force for these revenue increases lies in the growth of TV households. These factors have affected the breakeven or normal profit point which we term the threshold of cancellation.

The model explains that yearly rating thresholds have not remained static, but declined in response to competitive factors shaping the industry between 1971-86. Specifically, the growth in TV households -- rendering each rating point more valuable -- has obviated any network imperative to regain their commanding 1970s audience share. Skyrocketing production factor costs have,

nevertheless, combined with competition from new technologies to push network expenditures somewhat closer to revenues. Hence even if the networks wanted to "buy back" some of the audiences they've lost to competitors, they would have only limited resources with which to do so.

What do these data suggest about the influence of economic variables in the ratings renewal process? One cannot simply assume that declining ratings and cancellation thresholds will necessarily bode ill for the networks. Certainly, the networks would not like to see their average ratings decline too much further than they have already. Yet increases in the absolute size of this audience, rendering each rating point more valuable, have helped sustain network revenues in the face of new competition. The networks actually desire lower ratings thresholds derived in this manner, since lower ratings imply easier to achieve break-even points.

This isn't to suggest that the profit maximizing explanation is the only factor operative in this context. But the close association between such factors as program costs, advertising revenue and household penetration provide at least a strong inferential validation of the model at hand.

ENDNOTES

1. Ratings resemble a form of non-price competition insofar as the programs themselves, like packaging, do not typically constitute an area of price competition among the networks. Broadcasters do, however, compete in order to gain larger audiences which justify higher advertising prices.
2. In making commercial minutes more valuable, FTAR precipitated the first ever profits for ABC.
3. Despite a return to profitability after 1980, recent trends suggest that the financial picture has darkened for the networks. After earning record revenues in 1984, the CBS Broadcast Group experienced an 11 percent decline in profits last year (down from 360 million to 320 million). Moreover, revenue for the three networks fell 3.4 percent in 1985 (Detroit Free Press, July 5, 1986).
4. The concept of a break-even point flows from microeconomic analysis and was first applied to network TV by Pearce in Botein (3, p. 10). The innovativeness of our approach is to relate the breakeven point to a threshold of cancellation.
5. This household factor is an important component in the determination of ratings thresholds. When the denominator of the rating term increases while the numerator falls, declines in the overall rating term will intensify. Ratings for a typical program "a" can be expressed as follows:
 
$$\text{Rating a} = \frac{HH}{HH} a \begin{matrix} \downarrow \\ \uparrow \end{matrix}$$
6. This caveat will not exclude Fall season shows which were cancelled during the first 5 weeks. It does, however, render our method distinct from that of previous studies which included replacement series.
7. Programs investigated included "Gunsmoke", "Mannix", "Adam 12" (cancelled in 1975); "The Rookies" and "Marcus Welby" (1976), "Streets of San Francisco" (1977), "The Six Million Dollar Man" and "Carol Burnett" (1978); and "Battlestar Galactica" and "Paper Chase" (1979).
8. Cable advertising has yet to catch on due to problems of audience measurement and fragmentation.

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**Table 1: Measures of Cable Penetration Growth, Selected Years, 1970-1985.**

<b>Year</b>	<b>Number of TV Homes (in Millions)</b>	<b>Percent of TV Homes with Cable</b>
1970	60.1	7.6
1973	66.2	11.1
1975	69.6	14.3
1977	72.2	17.3
1979	76.3	19.0
1981	77.8	27.3
1983	83.3	39.3
1985	85.9	45.7

**Source: A.C. Nielsen Co., household figures for September, various years**

Table 2. Percentage of original network programming 1970-1986.

Year	CBS	NBC	ABC
1970/71a	56.0	na	65.0
1971/72a	56.0	59.0	60.0
1974/75	61.5	60.9	60.5
1975/76b	61.2	59.3	68.1
1976/77	63.2	69.8	69.7
1977/78	66.3	66.5	69.1
1978/79	66.1	68.1	69.6
1979/80	65.7	61.8	69.3
1980/81c	62.6	58.8	66.4
1981/82	64.6	59.8	66.7
1982/83	60.6	60.0	66.3
1983/84b	61.6	59.5	67.2
1985/86	62.6	61.5	63.3

Note: na = not available

Source: aUS Office of the President, Analysis of the Causes and Effects of Increases in Same-Year Rerun Programming and Related Issues in Prime Time Network Television, March, 1973, cited in Litman (6); b Adjusted for Olympics, Republican and Democratic Conventions; The 1980 TV season was delayed by the actor's strike, and did not officially begin until October 27, 1980. Since the season was artificially shortened by about a month, the percentages were adjusted.



Table 3: Percentage of new series, 1971-1986

a

Year	
1971/72	39.1
1972/73	41.5
1973/74	43.0
1974/75	55.2
1975/76	61.8
1976/77	47.7
1977/78	48.1
1978/79	52.7
1979/80	46.7
1980/81	47.5
1981/82	40.9
1982/83	45.2
1983/84	49.6
1984/85	46.3
1985/86	40.9

Source: Variety Magazine, various years.

a

Percentages are based upon the number of new criterion series units, divided by the total number of criterion series. The unit of analysis was each half-hour length series; hour-long series were counted as two units.

Table 4: Network prime-time program costs and ratings

Year	Average Fall Series Prices Per Hour a	Threshold range (rating)	Median Rating	
		b Cancel/Renewal	General	Renewed Series
1971-1972	\$200,279	17.0 - 17.1	18.7	21.45
1972-1973	\$205,679	15.5 - 18.4	18.4	20.0
1973-1974	\$212,583	18.3*	17.8	21.35
1974-1975	\$212,838	17.1 - 18.9	18.4	22.2
1975-1976	\$254,756	17.7*	17.7	21.15
1976-1977	\$310,540	17.3 - 18.0	17.9	20.2
1977-1978	\$362,763	18.3 - 19.0	17.2	20.4
1978-1979	\$413,100	17.5 - 19.1	17.0	21.3
1979-1980	\$418,254	17.1*	17.5	20.8
1980-1981	\$556,102	16.0 - 17.5	17.0	19.9
1981-1982	\$571,597	15.2 - 16.6	16.5	18.35
1982-1983	\$638,740	15.2 - 18.4	15.25	18.35
1983-1984	\$661,058	15.1 - 15.5	15.1	17.2
1984-1985	\$725,151	11.2 - 14.2	14.4	17.1
1985-1986*	\$756,018	12.6 - 14.8	14.8	17.8

Source: a) Variety, Fall TV season edition, September/October, various years.

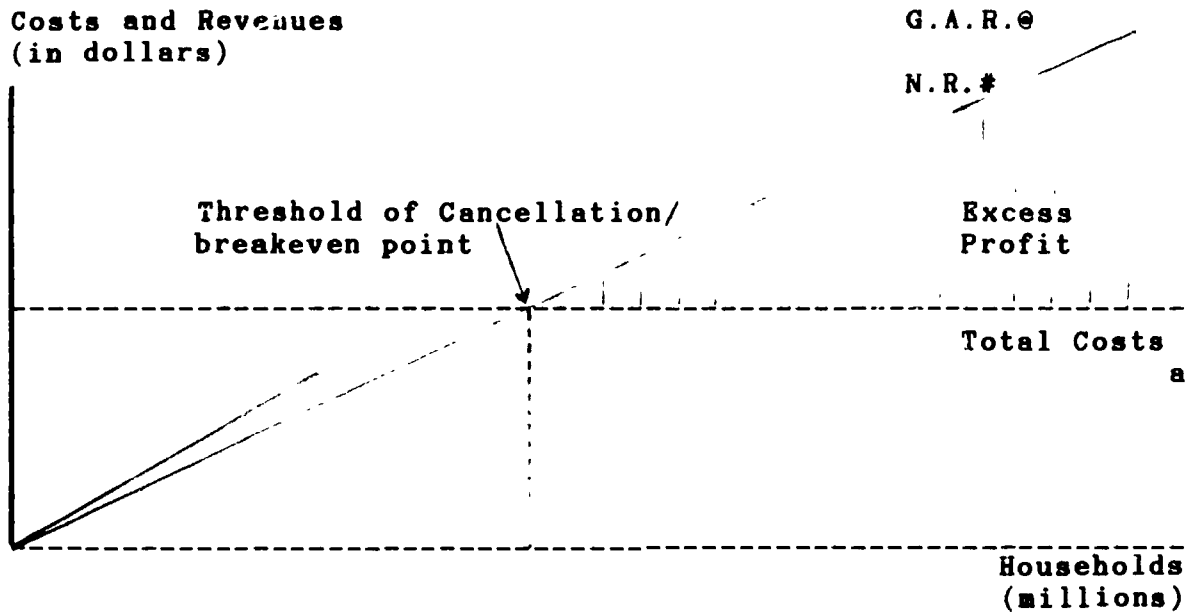
b) Variety, Spring TV season edition, April/May/June, various years.)

Note: Above costs are for regular series beginning in the Fall of each season. These figures do not include miniseries, made-for-TV or theatrical movies.

\*1985-1986 figures are preliminary, as they do not reflect the final roster of returning series for Fall, 1986.

FIGURE 1

Costs, Revenues and the threshold of Cancellation



⊙G.A.R. = Gross Advertising Revenue (Price/30 second ad x number of thirty second spots/hour).

#N.R. = Net Advertising revenue (G.A.R. minus agency commission).

aT.C = Total Cost (station compensation cost, program costs, network expenses, etc.)

FIGURE 2.1

Deviation of the Threshold of Cancellation (Rising Costs)

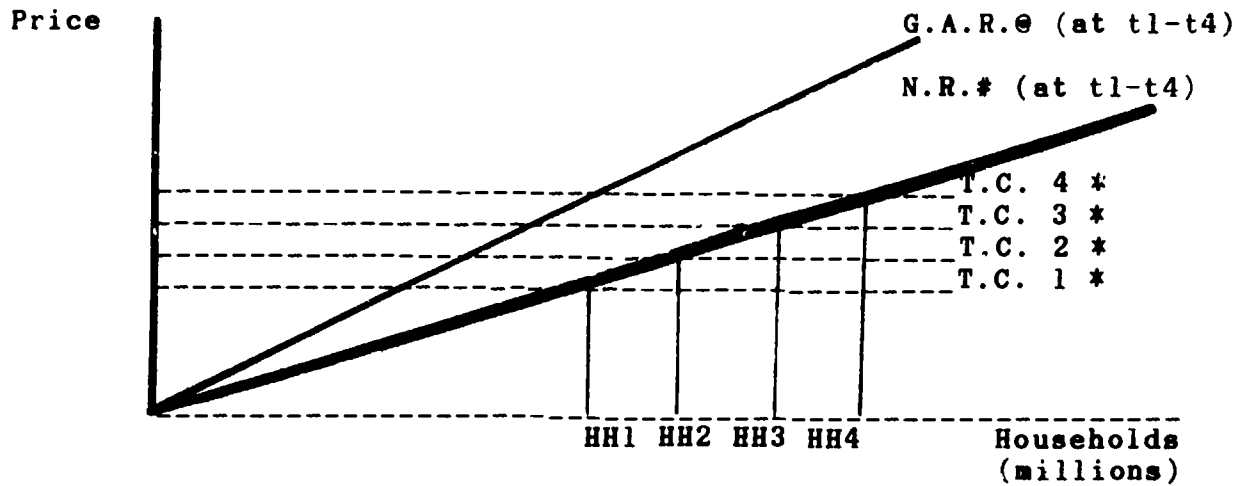
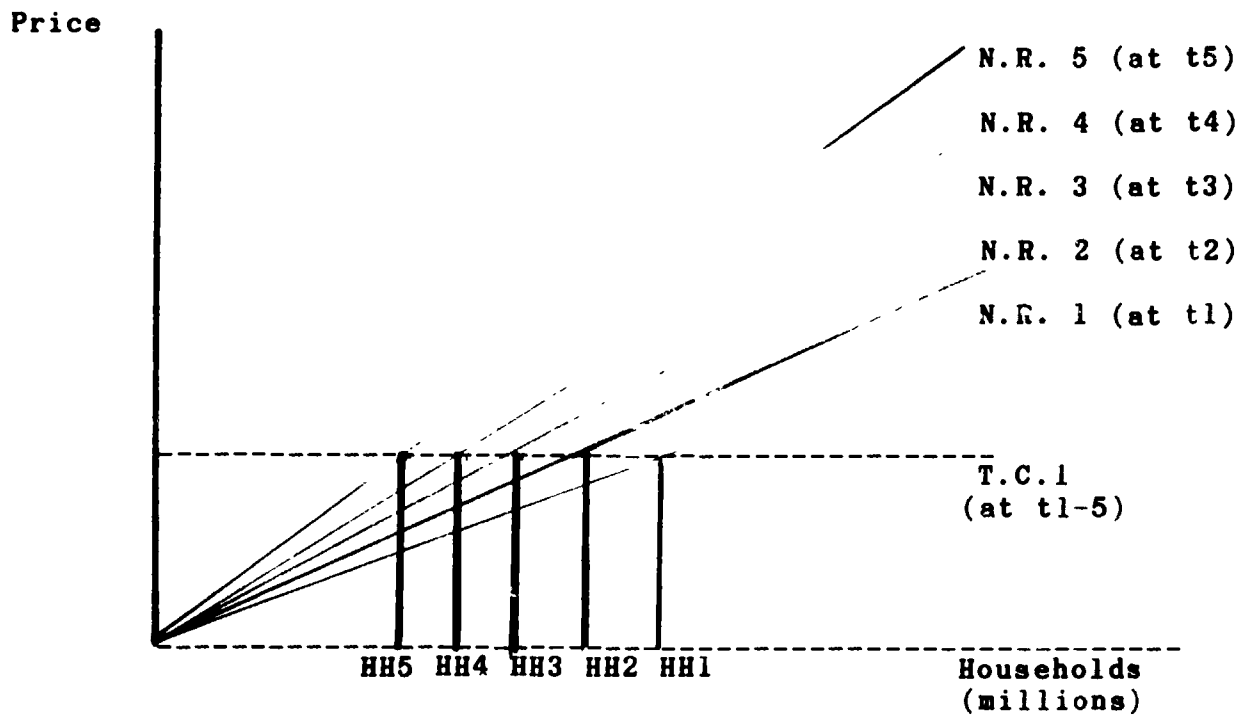


FIGURE 2.2

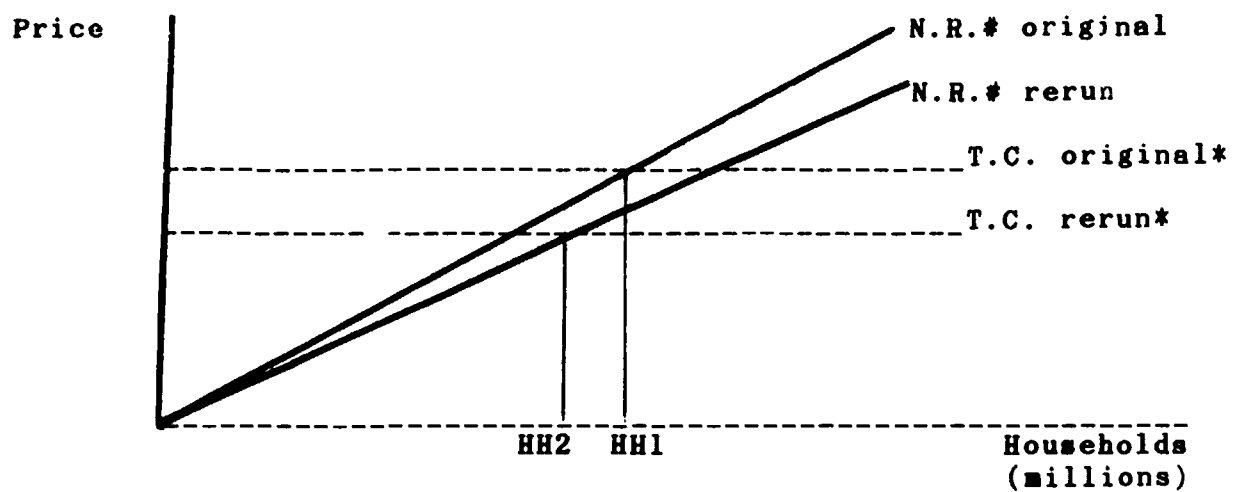
Derivation of the Threshold of Cancellation (Rising Revenues)



#N.R. is Network Revenue after deduction of agency commission.  
 ⊙G.A.R. (Gross Ad Revenue) equals price/30 second ad x number of thirty second spots per hour. It does not change the rising revenue-household scenario & is hence not included in fig. 2.2.  
 \*T.C. 1 is Total Cost at time period 1, T.C. 2 is at period 2, and so forth. T.C. represents a fixed cost.

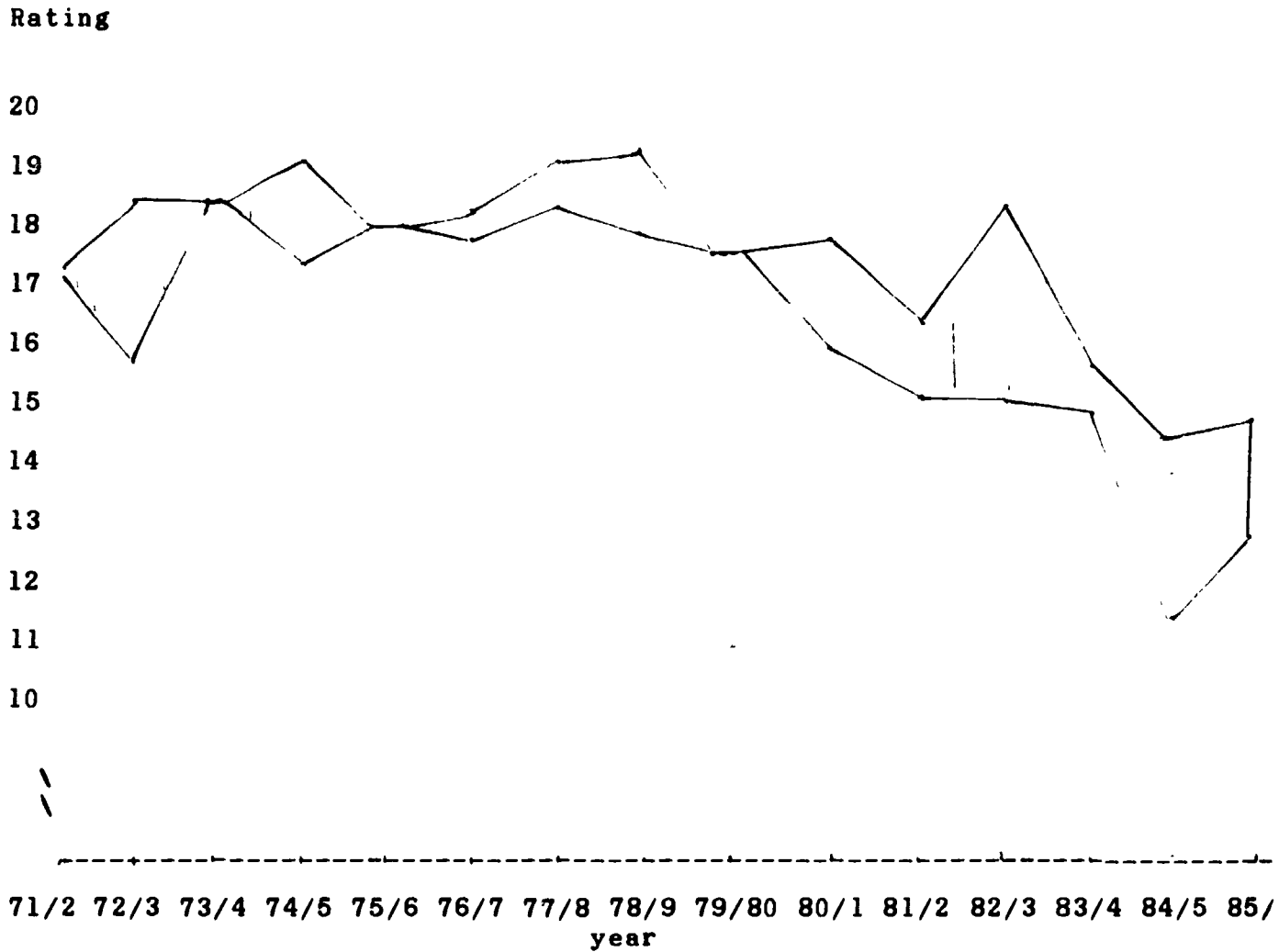
FIGURE 2.3

Deviation of the Threshold of Cancellation (Rerun Costs)



#N.R. is Network Revenue after deduction of agency commission.  
\*T.C. is Total Cost (fixed).

**FIGURE 3: NETWORK THRESHOLDS OF CANCELLATION AND RENEWAL, 1971-1985**



**Note:**

Top curve represents rating threshold for renewal; bottom curve is the threshold of cancellation. Shaded area is area of uncertainty.