

Superstardom and Monopolistic Power: Why Media Stars Earn More Than Their Marginal Contribution to Welfare

by

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In this paper we develop in two steps an argument which shows that superstar incomes exceed their marginal contribution to welfare. Firstly, we argue that superstar incomes can only exist if two conditions are met: There should indeed be differences in talent; but also superstars must be able to exploit monopolistic power due to their number-one position. Secondly, we introduce an elementary probabilistic model that shows that the existence of such monopolistic power explains the stylized facts concerning superstars, while the presumption that high incomes are completely generated by differences in talent, is rejected by this model. (JEL: D 62, J 31)

1. Introduction

The phenomenon of superstars with extremely high incomes has been in the public eye since World War II, with the increasing role of mass media in daily life. The best actors, directors, producers, violinists, pop musicians, athletes, writers, software producers, etc. can command annual incomes for which the sky is the limit. Every year new records are set, although – because of the lack of empirical inquiry in this field – it is unclear whether the number and the average career duration of these superstars is increasing or decreasing, and what their share is in the total volume of incomes.

According to standard neoclassical economic theory, superstars are paid according to their marginal contribution to welfare. THEEUWES [1991] reports that the total gains from superstars such as the pop musician and actress Madonna and the soccer player Maradona far exceed their extremely high salaries. He concludes that, in relation to their marginal contribution, these superstars are even underpaid. However, neoclassical theory would also lead us to expect a leveling-out of rewards (price reductions), because of free competition. Yet in some markets, superstars can be compared with black holes: They capture the lion's share of the net added value in the market, leaving little or nothing to their competitors. The neoclassical interpretation of the superstar phenomenon must therefore assert that superstars have a certain property

which is not at all approximated by other people, which explains why substitution and free competition do not lead to lower incomes. Recently FRANK and COOK [1995] therefore rejected this neoclassical interpretation and explained superstar incomes by extra-marginal benefits. However, why these extra-marginal benefits are not eliminated by competition is not explained.

In this paper we will rebut the traditional view that superstars have extremely high incomes because they are extremely talented compared to others, and therefore make an extremely high marginal contribution to welfare. The opposite position, that superstar incomes result from luck, in a kind of lottery, is also rejected as unlikely. One typical characteristic of the activities in which superstar incomes emerge is that only winning counts. Those who attain the status of superstars are *primus inter pares*, because small relative differences are of decisive importance here. In our opinion, superstar incomes arise even though the differences are very small, providing two conditions are met simultaneously. Firstly, the superstar has indeed to be *more talented* than others. Secondly, there must be a certain degree of *monopolistic power* which emerges when a performance is infinitely replicable using mass media. People prefer to watch the best players, who are quite literally represented by the winner, so that the superstars become representatives, not only of their own talent, but also of the arts or sports in which they are involved. Since winners can not be separated from the activity in which they excel, the superstar becomes a monopolistic owner of the media activity. This "property right" is, moreover, endogenous, encouraging a race for the rents of being the winner. The rents that can be obtained by the winner consist of a quality surplus and a production surplus: The quality surplus is due to the fact that, in a superstar economy, output is concentrated among the few superstars offering the highest quality; the production surplus is due to the fact that products or services sold by superstars have lower unit production costs thanks to large-scale easy replication.

The popular and dominant view about superstar incomes is that although these rewards are extraordinarily high, they can still be defended because societal benefits are enormous too. For instance, against small costs people all over the world can listen to the music of Michael Jackson and see Michael Jordan play basketball. It is exactly this view that we will contest in this paper. Our contention is that the real benefit for society is only the quality difference between the number-one superstar and the most direct contenders. Take the soccer player Maradona as an example: We suggest that a large part of the contribution to welfare is not due to his talent, but is in fact already embodied or implicit in the popularity of the Italian soccer competition. If Maradona had never appeared in the Italian competition, another talented player would have been the top attraction of the league and would therefore have earned similar amounts. This theoretical discussion about the nature of superstar incomes is therefore immediately relevant for the recent problems in the US baseball league. In that dispute, the focus is on the question of whether the salaries of these professionals should be regulated. Our discussion will point to an eco-

conomic rationale for regulation by the sport's coordinating association. A strong association will restrict the monopolistic power of the superstars.

This paper begins by suggesting some stylized facts concerning superstar incomes (section 2). Based on casual empirical observations available to everyone, these facts seem to fit the usual image we have of superstar incomes. Next, we present and discuss the explanations of superstar incomes in the economic literature, starting with Adam Smith and briefly reviewing the contemporary analysis by Rosen and others (section 3). Sections 4 and 5 deal with the two conditions necessary for superstar incomes to emerge. In section 6, we present a model which explains why it is unlikely that superstars earn no more than their marginal contribution to welfare. Alternatively, we explain the extremely high incomes in terms of endogenous monopolistic property rights which are often connected to media activities. We show that these endogenous property rights tend to be inefficient, as well as being seen as unfair. For that reason, institutions emerge which attempt to regulate these markets, such as the National Basketball Association in the US. But the position of the superstars remains strong, because they can threaten to withdraw from the official competition.

2. Stylized Facts Concerning Superstars

The casual empirical observations we start with can be seen directly from the Forbes' list. There are people who earn extremely high incomes compared to other workers. Their occupations are generally closely connected to the media: singers, players, sportsmen. These people are connected with the production of products which can be "consumed" by many people at one time, and can be replicated very easily to extend even further the scope of the market. For example, the largest investment for a new stage play is in writing the script, building the decor, and practicing. The play itself can be performed for large audiences and can be repeated very often, at very low additional costs. In recent decades, the ways in which superstar activities can be replicated have increased even further, with the spread of radio, television, compact discs, and satellite communication. Nowadays performances can be broadcasted world-wide. Although some market differentiation remains because of differences in culture and language, very few people are needed to provide a performance for a very large group of consumers.

Because of the lack of systematic and reliable data on superstar incomes, we have chosen three stylized facts which we think describe the superstar phenomenon adequately.¹ The model in section 6 generates these stylized facts, and shows that the view that superstars' earnings equal their marginal contribu-

¹ HAMLEN [1991], [1994] provides empirical results about the incomes of superstar popular singers.

tion, because of their extraordinary talent, is not consistent with these “facts” or casual observations.

Firstly, media superstars earn much more than those whose talent are not suitable for media replication. The best plumbers earn much less than the best football players, and the best seamstresses are paid much less than the well-known mannequins.

A second stylized fact about superstars is that the wage seems to increase with the extent of the market. Media technology increases the possibilities for a large part of the world market to be served by one person. This seems to cause a rise in wages. Nowadays, pop musicians who are known around the world earn much more than local artists a century ago. The differences in superstar incomes between small and large countries also seem to indicate that the scale of the market influences the earnings of the participants. The sports leagues in the US pay much better than comparable leagues in Switzerland and other smaller countries. The various sports themselves also provide markets of differing extents, and the largest earnings are obtained from the most popular sports. Basketball players earn much more than the stars of bowls.

The third stylized fact is that the superstars are not as unique as the commentators’ hype might lead one to expect. A superstar who falls from stardom (for example, due to age or injury) will be replaced by a newcomer as a matter of course. Although differences in earnings between rivals within a market may be considerable, in general the variation in income between superstars talents is relatively low compared with the influence of scale mentioned above. That is, the extent of the market seems to be a more important determinant of wages than the quality of the superstar. If the best player had not participated in the competition, the second best would have been the champion and would have earned a comparable income.

3. Alternative Explanations of the Superstar Phenomenon

Superstar incomes appear to us as a fairly recent phenomenon. However, Adam SMITH [1776/1982, 209] observed this phenomenon, and tried to explain it:

“There are some very agreeable and beautiful talents of which the possession commands a certain sort of admiration; but of which the exercise for the sake of gain is considered, whether from reason or prejudice, as a sort of public prostitution. The pecuniary recompense, therefore, of those who exercise them in this manner must be sufficient, not only to pay for the time, labour, and expense of acquiring the talents, but for the discredit which attends the employment of them as the means of subsistence. The exorbitant rewards of players, opera-singers, opera-dancers, etc. are founded upon those two principles; the rarity and beauty of the talents, and the discredit of employing them in this manner.”

As the prostitute transforms her body into a means of production and offers it as merchandise, the superstar *avant la lettre* exploits some other quality, attribute, talent or skill for commercial ends. According to Smith the income is made up of two components, a scarcity price for the rarity and beauty of the talent and a compensation for the discredit suffered. What is remarkable about Smith's analysis is that "superstars" capitalizing on their talent in his time were apparently more reviled than adored, in sharp contrast to the contemporary situation. This might of course also reflect Smith's personal evaluation of opera singers. For Smith (p. 209) the disapproval and blame are the reverse side of the high pecuniary reward:

"It seems absurd at first sight that we should despise their persons and yet reward their talents with the most profuse liberality. While we do the one, however, we must of necessity do the other. Should the public opinion or prejudice ever alter with regard to such occupations, their pecuniary recompense would quickly diminish. More people would apply to them, and the competition would quickly reduce the price of labour. Such talents, though far from being common, are by no means so rare as is imagined. Many people possess them in great perfection, who disdain to make use of them; and many more are capable of acquiring them if anything could be made honourably by them."

It is very interesting to note that in Smith's opinion the extremely high salaries of "superstars" could not be explained solely by the scarcity of their talent. Therefore he needed the discredit connected to the jobs as an argument to fit these exceptional cases as a kind of compensating wage differentials in his classical economic framework. Given the high social standing of professional opera singers and other superstars, at least nowadays, is it possible that Smith's unconditional confidence in the price-reducing tendency of free competition is misplaced? Competition among many suppliers should moderate the differences in reward. Apparently Smith overlooked some relevant fact.²

In two articles, ROSEN [1981], [1983] described the superstar phenomenon as follows:

² Smith is not alone in his opinion. Two protagonists of just income distribution theories, Rawls and Walzer, share his view. According to Walzer: "In fact, the more perfect the market, the smaller the inequalities of income will be, and the fewer the failures. If we assume a rough equality in mobility, information, and the opportunities for training, it ought to be the case that the most attractive jobs will draw the most applicants, and so the wages they pay will fall; less attractive jobs will be shunned, and so those wages will rise" (WALZER [1983, 117]). Rawls' theory of justice has a statement of the same import: "The operation of the principles of equal liberty and open positions prevents these contingencies from occurring . . . While nothing guarantees that inequalities will not be significant, there is a persistent tendency for them to be levelled down by the increasing availability of educated talent and ever widening opportunities. The conditions established by the other principles insure that the disparities likely to result will be much less than the differences that men have often tolerated in the past" (RAWLS [1971, 158]).

“The phenomenon of Superstars, wherein relatively small numbers of people earn enormous amounts of money and dominate the activities in which they engage, seems to be increasingly important in the modern world . . . In certain kinds of economic activity there is concentration of output among a few individuals, marked skewness in the associated distributions of income and very large rewards at the top” (ROSEN [1981, 845]).

Rosen gives several explanations for this phenomenon: (a) imperfect substitution, (b) costless reproduction, and (c) opportunity costs of consumption. Imperfect substitution means that people want to pay more than 10% extra for a surgeon with a 10% higher score in successful operations, or that one show of a top singer is preferred to a number of performances, for the same price, by others of less quality. Superstars can boast of an achievement which is beyond any comparison with the achievements of their rivals. Within the contexts in which superstars operate, small quantitative or qualitative differences define a qualitative peak, which means that the number one is absolutely distinguished from competitors. However, imperfect substitution alone is not enough for superstars to be able to capture the lion's share of the rewards. The effect of imperfect substitution can be considerably amplified if the superstar's performance can be replicated through a medium (e.g. audio-visual media such as CDs, video-tapes or film, other media such as books, software, etc.). Through the medium the achievement of the superstar can be replicated infinitely (its uniqueness is multiplied), the product or service becomes a non-rival good and the unit cost of production decreases with economies of scale. So Adam Smith's opera singer is already an embryonic form of media replication in combination with imperfect substitution, while the successful surgeon is an example of imperfect substitution without replication.

Useful as it is, Rosen's attempt to give a neoclassical explanation for the superstar phenomenon remains to some extent unsatisfactory. Rosen thinks superstar incomes can be explained as the product of the extent of the market on the one hand, and the marginal difference between the best and the second best producer on the other hand. But in a market of a given extent, a high income can only result if the difference between number one and number two remains reasonably large. As the market becomes larger, the pool of talent will also become larger, thus increasing the competition between potential stars, if we are applying a neoclassical framework. In the case of good surgeons, the scarcity of talent and imperfect substitution might indeed be relevant factors in explaining their high incomes. But for media stars, the simple fact that, in an extreme case, only one star is needed to serve the whole market implies almost unavoidably that talent cannot be scarce. Of course, it could happen that an actor or player is very much better than all competitors, but this must be a fairly rare, and temporary, situation, as we will also shown in the model in section 6. To explain the facts, it will be necessary to sacrifice the assumption that superstars capture only their marginal contribution to welfare, and look for other factors which generate a surplus.

Following in the footsteps of Rosen, others have suggested additional causes. BOWBRICK [1983] believes that the superstar phenomenon can be partly explained by searching for the common denominator in joint consumption. Joint consumption can lead to “mediocrity of choices” (e.g. with movies, television programs, deep freeze meals). Suppose all people have a favorite actor, but also aversions against other actors. Then a movie with two or more movie stars need not attract more visitors than one with just one movie star.

ADLER [1985] tries to show that the superstar phenomenon can emerge even without differences in talent or performance. The crucial assumption here was made by STIGLER and BECKER [1977], who said that consumption (e.g. with music or literature) is at the same time a learning process. This means that the degree of satisfaction increases with greater acquaintance with the artist or genre, and that the choice of an artist or genre depends on their fame and publicity. Because of this formation on consumption capital, it is rational to restrict oneself to a few artistic genres and a few artists. If everyone chooses a different genre or artist, mutual discussion and information transfer is impossible, whereas if many people make the same choice, search and learning costs can be reduced. And these costs are minimized by choosing the most popular artist:

“To reemphasize, the star need not possess greater talent. Stardom is a market device to economize on learning costs in activities where ‘the more you know the more you enjoy’. Thus stardom may be independent of the existence of a hierarchy of talent” (ADLER [1985, 208]).

In the model developed by Adler, anybody can become the superstar, even with equal talents.³ A more radical form of Adler’s argument would be to suppose that, where there are unequal talents or products, it is not necessarily the best which will become the star. Some word-processing programs have high market shares not because they are the best of their kind, but because so many other consumers already use them (ARTHUR [1989]). The importance of Adler’s contribution is that it provides an explanation of why superstars can have extremely high earnings without any other talent – possibly only slightly less gifted – entering the market and obtaining a substantial market share by asking lower prices. The elegant model of CHUNG and COX [1994] is entirely along these lines.

MACDONALD [1988] compares superstar incomes with a “lot” won in a lottery. Potential stars have at first to be satisfied with a lower reward than they could have earned otherwise, but they hope that in the future they will be the

³ “First, bills of all colors could serve as money and likewise all [i.e., any of the] artists could be stars. Second, efficiency calls for only money and likewise efficiency calls for very few artists with public recognition . . . If there were a slight majority of consumers that picked X as their choice, X would snowball into the star because after each period this majority would increase” (ADLER [1985, 211]).

superstar. Thus the superstar's income can be partly considered as a compensation for the lower reward in the investment phase, and partly as a prize for the winning "lot." Adam Smith was also aware of this mechanism. His main complaint about these disguised lotteries was not the concentration of income for the few, but that these lotteries are not fair lotteries or *pari-mutuels*, that is lotteries in which the winners share the investments of the losers.⁴

Probably the best investigated cases of skewness in the distribution of income within one and the same occupation is that of managers⁵ and to a lesser extent, lawyers. In both cases there is a scale-of-resources effect at work, which entails that the amount of "resources" assigned to workers increases more than proportionally with the quality of the workers. For lawyers, this effect arises because the only way to give lawyers of outstanding skill more work (or more important work) is to assign them legal claims in which larger sums of money are at stake (SPURR [1987, 503 ff.]). A similar argument for managers can be found in WALDMAN [1984]. High ability workers are assigned to jobs with a high marginal product of ability. If one moves up along the hierarchy within and between firms, the relative increase in the latter is higher than in the former, leading to a wage distribution which is skewed to the right. (The example given by Waldman is that the president of GM is of higher quality and subsequently much better paid than the president of American Motors.)

In KREMER's [1993] O-ring theory, the product made only retains its value if all the tasks required to make it are completed properly. (The paradigmatic example is the exploded Challenger due to malfunction of the O-rings.) The impossibility of substituting quantity for quality of labor and the fact that high talent enters the production function multiplicatively, again gives rise to an income distribution which is skewed to the right. This explanation is akin to explanations of high managerial income, since managerial talent also enters the production function multiplicatively, while labor lower in the hierarchy exhibits the usual diminishing returns. Skewness of the productivity distribution as an argument for superstar incomes of course makes sense, but is also subject to the critique of ROSEN [1981]. As superstars become more unique, compared to their contemporaries, with respect to their talent, one might expect them also to be more unique in time, making superstardom a rare and temporary situation.

The most recent contribution and also the most comprehensive attempt to explain superstar incomes is FRANK and COOK's [1995] *The Winner-Take-All*

⁴ "Put your son apprentice to a shoemaker, there is little doubt of his learning to make a pair of shoes; but send him to study the law, it is a least twenty to one if ever he makes such proficiency as will enable him to live by the business. In a perfectly fair lottery, those who draw the prizes ought to gain all that should have been gained by the unsuccessful twenty. The counsellor of law who, perhaps, at near forty years of age, begins to make something by his profession, ought to receive the retribution, not only of his own so tedious and expensive education, but that of more than twenty others who are never likely to make anything by it" (SMITH [1776/1982, 208]).

⁵ See, e.g., LUCAS [1978], LAZEAR and ROSEN [1981] and ROSEN [1982].

Society. All the explanations given above can also be found there, and even far more richly documented. Frank and Cook apply the concept of winner-take-all payoff structures to a wide variety of economic activities, including the contest for elite educational degrees. They distinguish “mass” and “deep-pocket” winner-take-all markets, the first resulting “from the willingness of a large number of buyers to pay a little more for the services of one performer rather than another” – the latter resulting “from a small number of buyers who are intensely interested in the winner’s performance” (p. 26). Obviously, deep-pocket superstars can only arise if large sums of wealth are somehow concentrated in the hands of a few.

The main thrust of the book is that the winner-take-all payoff structure has permeated other sectors of the economy, that winner-take-all markets attract too many contestants, and that policies reducing the gains allotted to winners can be both equitable and efficient.⁶ The main cause of the rise of winner-take-all markets are the above mentioned technological changes, offering more leverage to the talented. Even when the lesser talented do not overestimate their chances of success, too many contestants are attracted to these activities, because each contestant does not take into account that their decision to engage in the struggle reduces the expected income of all rival contestants. In Frank and Cook’s thought experiment of a hypothetical economy with two occupations (potters and singers), the societal loss from overcrowding equals the prize of winning the contest. When the lesser talented do overestimate their chances, or when too many are sensitive to the lure of fame (the status motive), it would even have been better for society if the opportunity for superstardom had not existed (pp. 106–113). These inefficiencies are higher if talent differences are not easily observable (p. 114), if only the relative and not the absolute level of the performance matters (p. 116), and if the activity of top performers only brings about a different distribution of income; the paradigmatic case of the latter is lawyers fighting over a lawsuit; the opposite is a real innovation generating enormous benefits to others in which case there may even be too few contestants (pp. 119f.). Frank and Cook’s solution to these inefficiencies are higher tax rates⁷ or, if possible, “positional arms control agreements.”⁸ More important is that, according to them, there is no equity-efficiency trade-off if progressive taxation is applied to winner-take-all markets: Reducing the stakes will reduce the number of contestants, which may only give a small decline in

⁶ “... the winner-take-all payoff structure of the entertainment industry has increasingly permeated other sectors of the economy ... this payoff structure has led too many people to abandon productive alternatives in pursuit of the top prizes” (p. 101).

⁷ “If the problem is that the individual market rewards for an activity are too high from a social perspective, the simplest solution is to tax that activity, thus making it less attractive” (p. 121).

⁸ “... rules and regulations whose primary purpose is to curtail patterns of mutually offsetting investments” (p. 169).

the quality of the superstar, but a net increase in total output. Thus, Frank and Cook elegantly explain why in some markets only one or a few people will serve the whole market and also show that if these positions are rewarded by extra-marginal benefits an inefficient struggle for these positions arises. However, they do not explain why competition does not push down the rewards for these attractive positions.

Close inspection of all these explanations of superstar income reveals, however, that they provide reasons for how the situation can emerge in which one person serves the whole market. Yet a large market share does not guarantee a high income, since competition for this attractive position will push down the rewards, as explained by ROSEN [1981]. According to our view, one element is missing in these predominantly complementary explanations, namely the fact that superstardom is connected with a type of endogenous property right. It would be possible to evaluate talents on their own merit – although they can only be developed within a tradition or practice – but a superstar cannot be the best or the most well-known without a market framework: A winner requires a contest and other players, the losers. Although in our society we tend to attribute the win to the winner, in fact this is very disputable. According to libertarian property rights theories (KIRZNER [1981] and NOZICK [1974]), a person should be regarded as the owner of those things which he or she created. Since it is not possible to say that there would have been no winner if the superstar had decided not to take part in the contest, can the winner be said to “own” the extra reward which accrues just for being the best? The extra reward is not due to the way in which the superstar performs, but to the fact that people are not satisfied to watch other players once the superstar has been identified. Since in practice there is always some ambiguity regarding the potential winner of a game, superstardom is characterized by two properties. Firstly, there will be a competition for the lucrative number-one position, leading in the presence of rents to inefficient investment behavior. The winner in this competition will usually (pace Adler) be one of the most talented. Secondly, the superstar phenomenon is characterized by endogenous property rights. In the next two sections these two aspects will be discussed. Both are required to explain the phenomenon of high superstar incomes.

4. Differences in Talent

In the previous section we saw that Adam Smith and others had absolute confidence in the price-reducing tendency of free competition. What they overlooked is that, in some activities, only one or a few workers are needed to perform the task for a whole society, irrespective of how many people may want to do so. If the production technology for a product is such that only one producer is needed, efficiency requires that this position be taken by the most talented producer in this field. (For instance, in many markets a single news-

reader provides the news for the entire audience.)⁹ The uniqueness of the position would be expected to lead to strong competition for this job. This is what is actually observed, but contrary to Smith, Walzer and Rawls this competition does not bring the reward to a moderate level.

In the next section we will focus on how super-marginal prizes or payments are possible. For the moment we take their existence as given. Assume therefore that the best sportsman, player, singer, etc. will indeed have very high earnings. In that case many people would like to be the star, since the benefits exceed (opportunity) costs. But since only one or a few superstar positions are available, regardless of the extent of the market, it might be very lucrative for people to influence their probability of being one of the lucky winners – for instance by exercising and training. This is where the competition comes in. People invest in their skills to increase their own probability of winning. This results in a rat race or rent-seeking behavior, which is likely to be inefficient: Due to the negative external effects, people invest more than is optimal from an overall point of view.¹⁰

If a quality is involved for which many people do have equal talents, but for which the winner will receive a reward which is far above the marginal contribution, a struggle will follow in which the participants are prepared to “invest” their expected gain of becoming the superstar.¹¹ The problem is not only that such incomes are perhaps unjust, but also that these investments will reach inefficiently high levels (one of the main themes in FRANK and COOK [1995]). Each participant seeks to obtain the surplus by investments which do not benefit society. In practice, however, some people are more talented than others. During the struggle – and to some extent beforehand – it will be clear who is going to be the winner of the superstar contest.¹² This implies that those engaged in the contest will not have to make investments which entirely offset the future earnings. In this situation it will appear that the extreme earnings can be explained by the talents involved. However, this is not always correct. As ADLER [1985] and CHUNG and COX [1994] have shown, consumers may reduce searching and learning costs by choosing stars not only because of their talent, but also because they are the most well-known. Thus superstardom is simply a device to reduce these costs.

Assuming that the probability of being the winner is influenced by both talent and training, one would expect the competition to be more inefficient if it is difficult for competitors to ascertain the differences in talent, if the training

⁹ Strictly speaking, this person's talents in other activities should be considered. The job might actually go to the second most suitable person, where the number-one talent can make an even larger marginal contribution to welfare in another position.

¹⁰ See FRANK and COOK's [1995] book and ROSEN's [1996] review of this book for a discussion of these topics.

¹¹ This phenomenon is known as rent-seeking.

¹² This element is criticized by ROSEN [1996, 134] in his review of Frank and Cook: “Working life is long and most of the time this information comes fairly quickly.”

efforts made by others are unknown, or if the game has a large random component. If, on the other hand, everybody can predict who is going to be the winner, nobody will overinvest in training. The losers will quit even before the game is played, while the winner has nothing to lose, and will therefore invest only as much as is optimal for a winning performance.

The possibility of superstar incomes, however, usually requires at least some differences in talent. If everybody has the same initial probability of winning, and the same chance of investing in training which increases this probability, then the optimal investment in human capital equals the expected net revenues of being the winner. This implies that (on average) all "rents" connected to the superstar position are absorbed by the training investments. Rents can survive only if some people have larger probabilities than others, i.e. if some people have more talent than others. In that case, more talented people are inclined to make larger investments than less talented players, since their break-even point is higher, and the negative externalities are then lower, since less talented people invest less. This proves that differences in talent are needed to make real superstar incomes possible. If talents are equal, high incomes may still emerge, but these can be considered as the winning lots in a lottery, in which the price of participation is the investment in training.¹³ However, we think that this lottery argument explains only a very small part of superstar incomes. The real source of superstar incomes is the double surplus generated by easily replicable products or services, as will be explained in section 6.

Another remarkable characteristic of the activities of superstars is that one can not sensibly speak of shortages or excess of supply. Although a shortage or excess of plumbers is possible, one never hears of a shortage of pop singers, presidents or athletic stars. Because one able candidate is in principle sufficient, appropriation of the position in mutual competition gives the winner a *de facto* "property right" on the number-one position. This "property right" is scarce and has a market value. Property rights here must be understood as a certain degree of monopolistic power to sell the activity. Because the number one receives the most (free) publicity and because of the relevance we attach to being number one, the superstar is also the one with the highest degree of monopolistic power.

The argument above, that superstar incomes are possible only if there are differences in talent may suggest that very high rewards are tied to extraordinary and scarce talents. However, in some fields people earn large amounts of money although their talent does not appear to be very scarce. For example, anchormen, news broadcasters, and talk show presenters (such as Walter Cronkite and Oprah Winfrey) earn very high salaries which do not appear to be justified by the difficulty of making a good presentation, the investment required to develop conversation techniques or the shortage of people with the ability to read news well. Although newsreaders may have competed with

¹³ See also footnote 3.

others for their job, the talent and abilities required are less extraordinary and scarce than those of the runners-up in sports. The high earnings here seem to be the result of the absolute scarcity of positions and the fact that, once a position is given to someone, they have a large advantage over substitutes because people become used to their voices and appearance. The income of superstars is therefore not due to the quality difference with their rivals: Superstars can receive a premium because they are the number one or the most well-known.

5. Monopolistic Use of Endogenous Property Rights

As mentioned in section 3, a second condition for the existence of superstar wages, in addition to differences in talent, is that media stars have a certain monopolistic power. This condition can best be illustrated with examples from sports.

A game requires at least two teams, and even more for a competition. Excellence of play can only emerge in a setting with many players, such as an on-going competitive league or still better a whole pyramid of competitions at all levels. Perhaps it would be a better reflection of the communal nature of the activity to give the ultimate ownership rights to the sport association as the representative of the community and the organizer of the competition. Basketball, for instance, is a communal activity, and the star is dependent on the presence of a culture in which basketball is cultivated. (Somebody with a talent for three dimensional billiards in space will have to wait some time.)¹⁴ However the champions (or at least the better players) seem to be required to "sell" a sport. The stars attract the public and therefore also commercial exploitation. Superstars not only carry out their media task, they also become the symbol of the activity. People want to see not only good basketball, but good basketball played by Michael Jordan. Fans not only appreciate absolute skill levels, but are also interested in the rank order of competitors. This implies that the superstar is a temporary monopolist.

Clubs are of course willing to pay a huge salary to lure a star into the team, and a star such as the soccer player Maradona is able to increase the income of his club enormously. But the contribution of a superstar to the income of the club is misleading as an indication of the star's "added value." The champion requires the context of the whole sport and the watching public which has

¹⁴ The superstar also depends on the organizing association as a supplier of rules. In tennis, a slight change in the rules of the game (for instance, the abolition of the second service) would change the rank order among the best players. In theory (that is with some imagination) it is possible to imagine for each player a set of rules so that they are the best. But the players do not have a right to arrange the rules so that they will emerge as number one. Those who are the current number ones owe their position in part to the rules of the game currently in force.

developed for the game. The champion in fact exploits this context, which provides him or her with rents, but any other champion would serve as well. The real marginal contribution of a superstar is therefore not the amount of revenue the star generates, but the additional revenues they generate as compared with the revenue generated by the next best champion. The rest of the star's salary consists of rents due to a temporary monopoly "ownership" of the sport as such.

In other words, some activities have a type of commercial value which can be "appropriated." For instance, given the large demand for medical services, medical practitioners can raise their income by restricting entrance into the medical professions. In this way a well-organized group can appropriate part of the commercial value of its activity, although the stock of medical knowledge is the result of a long history of medical practice and research. Superstars cannot and need not do this in order to appropriate a large part of the commercial value of the activity they stand for. In contrast to medical practitioners, media stars need not worry about (potential) competitors, because as long they are the best and consumers have a strong preference for the best,¹⁵ they can serve the whole market.¹⁶ Real price competition would require that the second best player could offer to replace the number one by asking a salary which is sufficiently low to compensate for his or her lower talent.¹⁷ But no amount of price difference can erase the fact that the number one is the number one. A game in which the champion participates is much more interesting than a game with some good players. The product sold by winners in sports cannot be offered by the losers (not even at a lower price), for the simple reason that the product exists only within the framework of a sporting competition intended to single out the winners.

A question which follows is whether this monopolistic position matters. COASE [1960] has shown that well-defined property rights are necessary for the efficiency of an economy. It does not matter who is the owner. This argument

¹⁵ Why people highly prefer the best performance and the best artist, and do not want to substitute the second best, is a difficult question (comparable perhaps to the importance of the "original" image in the fine arts).

¹⁶ An intermediate case in which the best producer can (in principle) serve the whole market, but must still reckon with direct competitors, is the market for software applications such as word-processing programs. If there were perfect substitution, and in the absence of learning and searching costs, the best producer would not be able to obtain extraordinary profits.

¹⁷ In a Walrasian world, the neoclassical concept of competition is linked with the price mechanism. The price (or wage) for a producer is negatively related to the strength of the competing behavior of others. In sports, however, the more popular the sport and the more numerous the participants competing for the number-one position, the more extraordinary it is to be the number one and the higher the reward for the one who carries off the first prize. For an example of the use of an efficient competition, analogous to a sport league with prizes, to allocate top jobs within an organization see LAZEAR and ROSEN [1981] and O'KEEFFE, VISCUSI and ZECKHAUSER [1984].

neglects the question of distributive justice, and in any case does not hold in the case of superstars. The important “property right” in relation to cultural or sporting superstars is connected to being the best. As shown in the previous section, being the best can in most cases be influenced by investment in human capital, i.e. by training, etc. This implies that the property right is endogenous. The right is not assigned in advance to a legal body (as would be the case if an association were to hold all property rights), but depends on the outcome of a competition. The competition will in most cases be inefficient, because of the negative externalities connected to the endogenous property right.

An example which illustrates the monopolistic use of the endogenous property rights is the struggle going on in the world of chess between the FIDE (Fédération Internationale d’Echec) and the PCA (Professional Chess Association). The PCA is led by Kasparov. Kasparov and Short had qualified to play the final match in the World Chess Championship, but had a disagreement regarding the distribution of benefits with FIDE, which claimed 25% of the benefits. This is the main source of income for the organization.¹⁸ In order to obtain more money out of their game, Kasparov and Short started their own chess organization, the PCA, which organized an alternative championship. Kasparov and Short have in mind an organization only for the professionals, as in tennis. In response, the FIDE invited the number three and four of the World Championship tournament (Timman and Karpov) to replace the two defectors, but it proved almost impossible to find sponsors prepared to finance the match. There was little media interest in the match, and what interest there was focused on the fact that a “fake” championship was being staged, while somewhere else the “real” champions were playing their match. This struggle for the right to name the champion led to the present situation of having two world champions, one of the FIDE and one of the PCA.

This shows that although ultimately the organizing association defines the rules of the game and is the owner of the title, the organization does not have complete power to exercise this property right. They lack a necessary ingredient, namely the significance of being the best. Thus in the short run the real champion can exploit the power of a unique position. To limit this monopoly power, the association has an interest in making the competition as tough as possible, that is, in keeping the differences between the teams or players as small as possible. Ideally, the outcome of the competition should always be unknown beforehand. Perhaps this monopoly power also explains why, in some sports in the US, salary caps and other measures have been put forward by the sports associations.

¹⁸ Similarly, a national soccer association earns a lot of money if their national team participates in the world championship. Only part of these benefits are shared with the players of the national team.

6. The Model

As Rosen noted, superstar wages cannot be explained simply by the availability of media which enable one person to serve very large groups of people.¹⁹ Although the size of the market makes it possible to profit from the replication of the good concerned, a large market also implies a large supply of talented performers and greater competition which, under neoclassical assumptions of a perfect market, should reduce the star's opportunity to exploit these profits. The main explanation which Rosen puts forward is imperfect substitution, whereas Adler points to the reduction of search and learning costs. In the previous sections, we have suggested that there are two necessary conditions for the existence of superstar incomes. The first is that there are differences in talent, or at least that some potential players have a larger *a priori* probability of winning the struggle than others. The second condition is that the winner's position entails an endogenous property right, i.e. people strongly prefer to watch the performance of someone known to be "the best." Implicit here is the view that there is imperfect substitution between the quantity and quality of services provided by superstars and their competitors. Given these two conditions, there can be a winner's rent which can be obtained by a superstar at an investment cost which is less than the net gain.²⁰

Of the two assumptions, that of talent differences is most easily accepted. The suggestion that endogenous property rights attach to the winner, and that these property rights make it possible for winners to earn more than their marginal contribution, is more controversial. As is shown by ROSEN [1983], neoclassical economics tends to explain all earnings differentials with marginal contributions, which leads one to assume that people who are able to earn so much must also have extremely valuable talents for which there is no close substitute.

This section will show, however, that it is plausible to argue that superstar wages represent a market failure: Superstars do not earn wages equivalent to their marginal contribution to society, but can temporarily appropriate part of the rents generated in a superstar economy. This appropriation is likely to be the most important part of their full income. In the following, a non-media production situation is compared with a simple model of a media economy in which technology enables one person to serve the whole market. Two outcomes of the media economy are distinguished: The *ordinary wages case* (in which stars earn their marginal contribution) is compared with the *superstar case* (in which total rents are earned by the superstar). We will demonstrate that only the superstar case is able to explain the stylized facts given in section 2.

¹⁹ For the emergence of skewed income distributions due to team production in large projects see KREMER [1993].

²⁰ This is what one would expect under efficient rent-seeking. The rents or non-compensatory transfers gained by the winners are balanced by the losses made by the losers.

Together with the conditions needed to make superstar incomes possible, this model explains when superstar incomes can emerge and how large they can be.

We will assume that every person in a society has a certain talent for a specific task, and that this talent is a draw from a probability density function of possible talents. In a media economy, if allocation is efficient, the person with the greatest talent will become the superstar. We will investigate how the wage relates to the extent of the market in both the ordinary wages case and the superstar case. We will show that superstar income need not increase with the size of the market, if the number of competitors increase proportionally. For a comparison, the situation in which no replication is possible will also be considered. The variances of the wages in each case will also be investigated.

The wage equations are worked out in detail, on the basis of the probability assumptions, at the end of this section. But first the model will be outlined, and a simplified version of the problem will be illustrated graphically, to highlight the essential points. In this illustration the distribution of talent is deterministic rather than stochastic.

6.1 Basic Assumptions

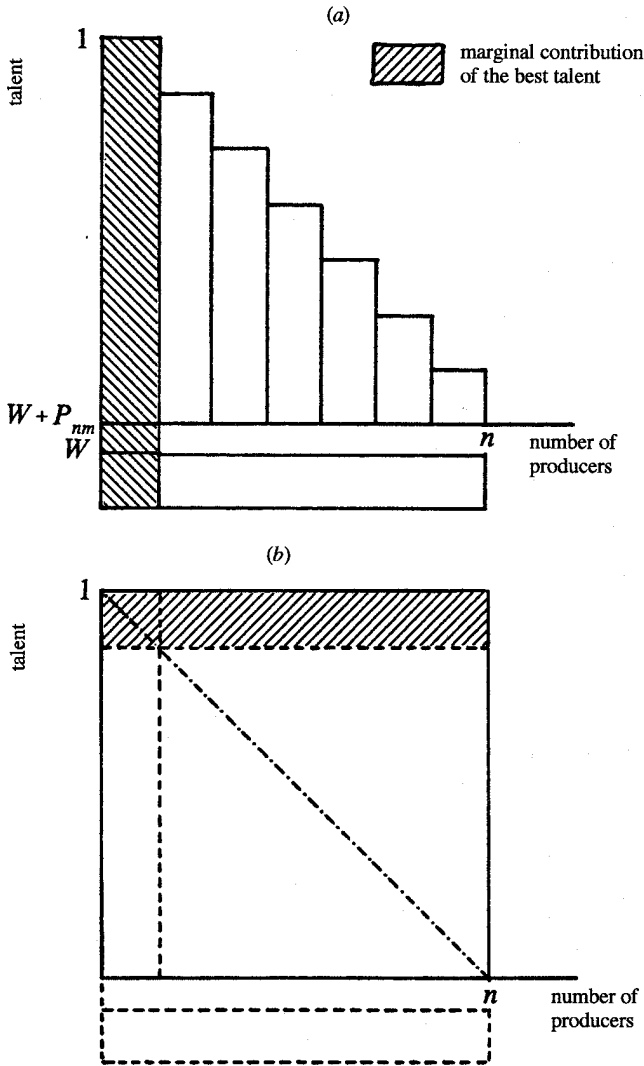
For simplicity, the market in this model is assumed to have an inelastic demand, so that demand is proportional to the extent of the market. In a market with N people, $n = y N$ services are required, for which people are willing to pay a price that depends on the quality. As long as competition works, the lowest price equals the costs of production of the minimum acceptable quality, and people will pay more for better qualities. The costs of production will comprise a normal wage W for the producers as a compensation for their opportunity costs, plus a constant unit cost P_{nm} for non-media production or – for media production – fixed costs C and variable costs P_m .

Talent q varies between 0 and 1. The distribution is normalized so that the marginal producer has quality zero. For better qualities, people are indifferent between the qualities if they have to pay an additional amount of q for q extra quality.

6.2 Graphic Solution

Figure 1a provides the distribution of talent, ordered from the most talented to the least talented person. First we assume that, in a non-media economy, every “talent” can serve only one customer, i.e. the talented person can only produce one of the n products. If competition works, it follows from Ricardian assumptions that the minimal acceptable talent, which serves the last unit of demand, will earn exactly the market wage which only compensates for the efforts that have to be made, but does not reward the talent itself. This will equal $W + P_{nm}$, the opportunity costs of labor plus the costs of production without the use of media. Better qualified producers receive these costs and a reward for their

Figure 1
Graphical Solution of the Superstar Model



additional talent q . For the most talented producer this additional compensation equals 1. This “talent wage” does not depend on the extent of the market because any growth in the market will also make more talent available. Therefore if n increases, the triangle in figure 1a becomes wider, and more producers will receive a wage close to 1, but the compensation for the top talent remains 1.

In total, an amount of $(\frac{1}{2} + P_{nm} + W)n$ is paid on this market: $(P_{nm} + W)n$ is needed to cover the costs of production and opportunity costs respectively; while $\frac{1}{2}n$ is used as a payment for varying degrees of talent.

The dashed lines in figure 1b show what will happen if a medium becomes available by which the most talented person is able to serve the whole market. It shows that in the first place the social surplus increases, since less talented producers are replaced by the best producer. Quality increases are such that, in the non-media compensation scheme, n would have been paid for this quality. The quality surplus therefore increases by $\frac{1}{2}n$. In the second place, the costs of production change. Instead of total costs $(P_{nm} + W)n$, now only $C + W + nP_m$ has to be covered. The variable costs are proportional to the extent of the market, but now only one person has to be paid an opportunity wage, and the fixed costs have only to be paid once.

Therefore if $C + W + nP_m - n(P_{nm} + W) < 0$, the production costs using media are lower than in the non-media case. Since $(C + W)/n$ approaches zero as n increases, above a certain market size media production will be cheaper, provided that the per unit replication costs (P_m) are not too high. Besides this advantage in production costs, there is also the additional advantage of improved quality ($\frac{1}{2}n$). Thus the total surplus using media production equals $n(P_{nm} + W) - C - W - nP_m + \frac{1}{2}n$.

The question then is, who will receive this surplus? One possibility would be to assign all the surplus to the single remaining producer, the media star. This could be the outcome if (a) the medium used to provide the service to all is the private property of the most talented, or (b) consumers only want the best quality, irrespective of whether less talented producers offer their services for lower prices. Neoclassical theory would however not agree with this solution. Although the quality surplus is increased by $\frac{1}{2}n$ compared with the non-media case, the marginal contribution of the most talented person is limited to the smaller upper segment in figure 1b. The reward therefore is more than proportional to the difference in talent from the second best. If the most talented person had not entered the market, the second best person would have taken over the position of media star, reducing the surplus by only this small segment. It does not need to be the most talented person who appropriates all or part of the surplus. According to the Coase theorem, so far as efficiency is concerned it is irrelevant who receives the surplus, as long as it is assigned *a priori*. The media star who has actually been chosen is therefore not the only eligible candidate for this surplus, since the identity of the star is endogenous in the allocation process: It depends on the outcome of the talent competition between the various producers.

With perfect substitution between the services produced by unequal talents, one would expect the price for the best quality to equal $(C + W + 1)/n + P_m$, if all consumers choose the best quality provided the price is as low as possible. In that (neoclassical) case – which we have called the ordinary wages case – the net earnings of the media star do not differ from the net earnings of the most

talented producer in the non-media case. The quality and production surplus is completely absorbed by the consumers as a consumer's surplus. The quality difference between number one and number two equals $1/n$ in the geometric example, so *the marginal contribution of number one* equals $(1/n) n = 1$, i.e. the extent of the market times the marginal quality improvement per product. Although the result depends on the exact distribution of the talent curve, it can be seen that the extent of the market does not automatically lead to a larger income for the media star. In a larger market there are more consumers, but also more competition. These two effects will more or less compensate for each other.

Thus the stylized facts concerning superstar incomes cannot be explained solely by quality differences, easy replication techniques and a large market. This analysis points to the existence of some mechanism by which the superstar in a media economy appropriates some of the surplus. We will now turn to a more formal analysis of the relationship between income and market extent outlined above, using probability theory.

6.3 Probabilities

Suppose that, in a society of n persons, everybody has a talent for a certain activity which is a random draw x from a certain talent distribution, with the probability density $f(x)$ and the cumulative probability density $F(x)$. Since the focus of the analysis is primarily on the most talented people, all residents x_1, \dots, x_n have to be sorted into the row y_1, \dots, y_n such that

$$(1) \quad n > m \Rightarrow y_n \geq y_m.$$

The analysis of such sorted variables is called order statistics.²¹ The probability density function of the best talent (y_n) equals

$$(2) \quad p(y_n) = nF(y_n)^{n-1}f(y_n).$$

If the talent probability density is for convenience taken to be equal to the uniform distribution and talent is scaled between 0 and 1, that is

$$(3) \quad f(x) = \begin{cases} 1 & \text{if } 0 \leq x \leq 1 \\ 0 & \text{elsewhere} \end{cases},$$

then the expectation of y_n equals

$$(4) \quad E\{y_n\} = \int_0^1 n y_n^{n-1} y_n dy_n = \frac{n}{n+1} y_n^{n+1} \Big|_0^1 = \frac{n}{n+1}.$$

²¹ See MOOD, GRAYBILL and BOES [1974] and DAVID [1981].

Similarly, the expectation of the second best talent (y_{n-1}) can be derived and equals $\frac{n-1}{n+1}$. Similar calculations can be used to derive the variances of y_n and y_{n-1} .

Table 1 contains the results for the expectation and variance of y_n , y_{n-1} , and $y_n - y_{n-1}$. Since the model has been developed primarily to study cases in which n is large, table 1 also contains the moments approximated for large values of n .

From table 1 it is possible to derive the wages of the most talented person in three different situations: if every client has to be served by one producer, i.e. the non-media case; if the best talent serves all people and receives the respective marginal contribution according to neoclassical theory, i.e. the ordinary wages case; and finally if the most talented person becomes a superstar and is able to appropriate the full production surplus, i.e. the superstar case. These results are summarized in table 2 and will be discussed one at a time.

Table 1
Expectations and Variances of y

	Expectation ^a	Variance ^a
y_n	$\frac{n}{n+1} \rightarrow 1$	$\frac{n}{2+5n+4n^2+n^3} \rightarrow \frac{1}{n^2}$
y_{n-1}	$\frac{n-1}{n+1} \rightarrow 1$	$\frac{2(n-1)}{2+5n+4n^2+n^3} \rightarrow \frac{2}{n^2}$
$y_n - y_{n-1}$	$\frac{1}{n+1} \rightarrow 0$	$\frac{n}{2+5n+4n^2+n^3} \rightarrow \frac{1}{n^2}$

^a With approximations for large n after the arrows.

Table 2
Average Wage its Standard Deviation, and Their Ratio

	Average wage ^a	Standard deviation of the wage ^b	$\frac{\text{Average wage}}{\text{Standard deviation}}$ ^b
Non-media case	$\frac{n}{n+1} \rightarrow 1$	$\frac{1}{n}$	n
Ordinary wages case	$\frac{n}{n+1} \rightarrow 1$	1	1
Superstar case	$\mu n \frac{n}{n+1} \rightarrow \mu n$	μ	n

^a With approximations for large n after the arrows.

^b Approximations for large n .

6.4 Non-Media Case

In the non-media case the most talented person receives only the respective productivity $\frac{n}{n+1}$ with variance $\frac{n}{2+5n+4n^2+n^3}$. Since for large values of n this variance approximates $\frac{1}{n^2}$ (and therefore the standard deviation approximates $\frac{1}{n}$), the t-value, i.e. the ratio between the average wage and the standard deviation of the wage, approximates n . This implies that as the population becomes large, the income of the most talented person becomes relatively stable compared with its expected value. The probability that the most talented person will earn only a fraction f (with $f < 1$) of expected income will approach zero as n increases.

6.5 Ordinary Wages Case

If the most talented person is able, using media technology, to serve the whole market, the second best talent becomes a direct competitor. In the non-media case this second best talent served the respective own part of the market, but with a lower productivity and at a correspondingly lower price. Therefore media stars can only demand a higher unit price in accordance with their marginal contribution over the number two's. Multiplied by the size of the market, the star's expected wage becomes

$$(5) \quad E\{n(y_n - y_{n-1})\} = n \frac{1}{n+1} = \frac{n}{n+1}.$$

This value is equal to the earnings of the most talented producer before media were invented and becomes close to 1 if n is large. This contradicts the first stylized fact. The variance of this wage will be equal to $n^2 \frac{n}{2+5n+4n^2+n^3}$, which is approximately equal to 1. The ratio between the average wage and the standard deviation equals approximately 1.

These findings have two important implications. Firstly, the wage of the media star is almost independent of the extent of the market. This implies that the most talented person in a small market (e.g. in a small country) earns approximately as much as the media star in a very large market. This contradicts the second stylized fact. Secondly, the variance in the wage is large. Regardless of the extent of the market, there is a significant probability that a media star will by chance receive an income which is far below or above the expected value. A ratio of 1 between the average wage and the standard deviation implies that in 30% of the cases the media star will receive only half the expected income. This large variance contradicts the third stylized fact.

6.6 Superstar Case

The contradictions between the prediction of the ordinary wages case and the stylized facts can be explained if media stars earn not only their marginal productivity, but also receive part of the total social surplus generated by media production. With completely imperfect substitution, stars would receive their full productivity for all products sold, irrespective of the productivity of others. With semi-imperfect substitution stars can only acquire part μ (with $0 \leq \mu \leq 1$) of the surplus. Together with the respective marginal productivity the expected wage of a star therefore equals $\mu n \frac{n-1}{n+1} + n \frac{1}{n+1}$, which grows with n .

The standard deviation of this income is approximately equal to μ , which is relatively low. The ratio between the average wage and the standard deviation equals approximately n .

This outcome is in accordance with the stylized facts: (a) The superstar earns a much higher wage than the best producers in the non-media and ordinary wages cases; (b) the superstar's income grows with the extent of the market; and (c) the variance is relatively low.

6.7 Robustness

The question which arises is whether these results are strongly influenced by the assumption that talent is drawn from a uniform distribution. *Firstly*, of course, the results would be comparable if the uniform distribution was not taken over the range $[0, 1]$ but over some other interval. *Secondly*, there is a very large probability that the best and second best producer have a quantity of talent which is very close to the upper segment of the distribution. Therefore the results will remain the same, providing at least that this upper segment corresponds to the uniform distribution. *Thirdly*, if this upper segment is not uniform, there are theoretically possible distributions for which the wage of the media star increases with the extent of the market even in the ordinary wages case. Every talent distribution can be looked upon as a transformation of the uniform distribution in which the productivity of more talented people increases more than proportionally. Linear approximations of such transformations $f(x)$ imply that the expected wage in the ordinary wages case becomes $f(w) w = f\left(\frac{n}{n+1}\right) \frac{n}{n+1}$. If f increases with n , e.g. as in $f(x) = \frac{x}{1-x}$, the wage in the ordinary wages case equals $\frac{n^2}{n+1}$, and thus increases with n . If the talent distribution has a very flat "tail," the probability that number one is much more talented than number two is large. But the variance of this difference will also increase rapidly, making this distribution unlikely. The linear approximation of the variance of this transformed distribution equals $f^2(w)$ times the variance in the case of a uniform distribution. The variance of 1 in the ordinary wages case therefore becomes n^2 , leaving the ratio between

the average wage and the standard deviation equal to 1. This implies that specific productivity distributions might indeed explain high average superstar incomes in the ordinary wages case, but at the same time imply that these high incomes must be a fairly rare and temporary situation, as ROSEN [1981] noticed. It therefore seems very unlikely that the uniform distribution does not provide a satisfactory description of the superstar phenomenon.

7. Conclusions

This paper has demonstrated that the incomes of superstars can far exceed their marginal contribution. According to neoclassical theory, in a perfect market everybody is paid according to their marginal product. At first sight the superstar economy is a classic case of high competitiveness. We would therefore expect a strong tendency for price and income reductions to moderate these incomes, but this does not in fact appear to happen.

Several (mutually compatible) explanations have been brought forward in the literature concerning superstar economics: imperfect substitution, easy or costless replication, opportunity costs of consumption, reduction in search and learning costs, and the lottery-like nature of superstar incomes. While all these explanations are compatible with the explanation elaborated in the present paper, they only provide partial or incidental explanations. The two general conditions which must be met for superstar incomes are differences in talent and an endogenous property right which can be claimed by the winner.

These endogenous property rights emerge in situations of media production. Due to media production, only one person is needed to serve the whole market, where without this technology many producers are needed. Efficient allocation requires the most talented producer to be assigned to this task, but in practice the situation provides this person with an opportunity to exploit the number-one position: Since once one person is known as the best, people strongly prefer to watch this winner rather than another producer. The superstar therefore has a certain monopolistic power.

Such monopolistic power would be useless if the superstar was not at the same time more talented than others. Due to the rents that can be gained, many people will be interested in assuming the superstar position, leading to competition. If everybody is equally talented and all have an equal chance of obtaining the superstar position, their investments to improve their chances (by training and promotion) will be so large that the expected gains from superstardom would be totally absorbed. Without differences in talent, the income of the superstar therefore reflects only the costs of all those who did not obtain this status.

However, these conditions do not prove that the actually observed superstar incomes are generated by extra-marginal rents, and are not simply a compensation for differences in talent. We have therefore postulated three stylized facts

which fit our casual empirical observations concerning superstar incomes. Superstar incomes are (a) mostly media incomes, which (b) tend to increase with the extent of the market, and (c) the extent of the market is much more important than the quality or superiority of the superstar. In the model presented in section 6, we showed that the three stylized facts only occur if superstars are paid more than their marginal contribution.

If the neoclassical assumption that superstar incomes reflect differences in talent was true, the wage would not, on average, increase with the extent of the market. Moreover, this would suggest that, where imperfect substitution between higher and lesser quality is an important factor, the accidental quality or the degree of superiority of the superstar would be an important factor in explaining superstar incomes. But it is not so much the difference in quality between rivals or the degree of superiority of superstars over their rivals which explains superstar incomes, but rather the uniqueness and relevance of the number-one position combined with the extent of the market in which the superstar can exploit the number-one position.

Thus the phenomenon of superstar incomes can be explained by the temporary monopolistic power of the bests in the activities in which they excel. The degree of monopolistic power and the particularities of the institutional framework determine how much of the rents are captured in the superstar's personal income. These findings provide a rationale for intervention in a market for media activities. For example, in the case of sports, a powerful sport association might restrain superstar's monopolistic power.

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