Working title: Unequality of recommendation in the music industry

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**2: Relationship between talent and popularity**

2.1: Why and how does superstardom occur: economic theories of stardom

As mentioned in the Introduction, we assume that there exists a popularity bias in recommendation systems. Therefore, it is valuable to understand what factors condition emergence of stars. Economists have been tackling this issue for the last 40 years. However, they have been often applying theories which had been formulated prior to their work.

Seventy years ago Marshall (1947) indicated that innovations in technology lower the unit price of quality goods and hence allow them to obtain greater market share. According to Rosen (1981), this very effect is partly responsible for the phenomenon of superstars. Exceptional revenues of stars are compelled by a market equilibrium that rewards people with increasing returns to ability. Due to scale economies allowing joint consumption, superstars can reach a vast audience – production costs do not rise in proportion to the size of seller’s market. In this way, a small number of suppliers can satisfy the demand of the whole market. Nonetheless, in large economies of scale, each member of the tiny group of artists can only reach high salary if the demand is highly concentrated on their services.

There are two substantial theories of stardom which reach back to the eighties. They are distinct but not mutually exclusive and state what drives the demand for superstar services: according to Rosen (1981) this factor is superior talent combined with perfect reproducibility of art, whilst Adler (1985) claimed network externalities of popularity to be responsible.

Pursuant to Rosen, poorer quality is an imperfect substitute for higher quality. He claims that small differences in talent translate to large earnings differentials. Then, most people are less satisfied with a performance of a less talented and cheaper artist when they have an opportunity to enjoy a top perfomance, even with the higher cost (Frey 1998). If the best artist is significantly better than the competition, “each consumer consuming the best” is a special case (Adler 2006). In this circumstances he becomes a monopolist whose profit maximizing strategy depends on the elasticity of demand for his product (if the demand is highly elastic, it pays off to serve the whole market). In Rosen’s model, there are two extreme options: either there is a very top artist who sets a high price and sells it to only a fraction of consumers (unless the damend is highly elastic) or there are several equally talented artists, one of which serves the whole market but is poor. In conclusion, if a star is both extraordinarily popular and rich, his talent must be unquestionably greater than the rest.

The second theory by Adler (1985) refers to the concept of “consumption capital” (Becker and Stigler 1977). Consumers built it in art and the larger it is, the greater the enjoyment from each encounter with its subject (art and artist). Consumption is a dynamic process rather than momentary experience and concumers want to consume the same art that others do, which is a key factor underlying production of superstars. When the artist is popular, it is easier to find other people familiar with his works or media coverage. However, in Adler’s model, the emergence of a star is a chance event: counsumers first include artists randomly in their consumption basket, and it is “pure luck” that one artist ends up with more patrons than the rest. It obviously gives him advantage, which can then snowball into superstardom.

The third important theory of stardom comes from MacDonald (1988). He described a dynamic process through which stars arise. Each artist is capable of a good or bad performance. The difference in talent is then defined differently than in the two previous models: it is not the quality of performances but rather the probability that a particular performance will be good (constant throughout the artist’s career). But from the viewpoint of audiences, this probability is lower for a new performer than for a famous one. Those who perform poorly drop out, while good artists stay on the market and increase their probability of performing well in the future. In this way, artists with a good track record can appoint higher prices. In conclusion, artists of corresponding talent do equitably well.

Finally, the last important theory of stardom is a stochastic model of superstardom developed by Chung and Cox (1994). They employed a stochastic model of Yule (1924) and Simon (1995) (known as the “Yule distribution”) as a representation of the consumer’s choice behaviour. Simon showed that a wide range of data conforms to a class of distributions obtained from stochastic processes similar to those yielding negative binomial or log series distributions. This class is given by:

where *ψ* and *ρ* are constants, > 0, ∞ > ρ > 0 and:

2.2 Empirical testing of stardom theories in existing literature

In this section we deliver a brief summary of empirical literature on superstar emergence.

Hamlen (1991, 1994) measured relationship between harmonic quality of a singer’s voice and record sales and found out that they indeed increase with the quality of the voice. However, in this studies, differences in talent exceeded differences in sales. The author interpreted results being conforming with Rosen’s model (artists are rewarded for talent). The above mentioned article of Chung and Cox also contains empirical part. They proved that the distribution of success among artists resembles the Yule distribution basing on the number of CDs sold. The probability that a consumer would buy a particular CD increased with the number of previous sales of that CD. However, a small chance that a consumer will choose a new CD that no other person has bought always remains. Hence, an initial small advantage may snowball into success, which supports Adler’s theory. Schulze (2003) argues with both above mentioned works. He criticized Hamlen for the quality of voice being irrelevant measure for singles of non-classical genres. He also claims that the process described by Chung and Cox is also consistent with Rosen’s theory (consumers’ choices based on talent).

Another study advocating importance of initiall advantage is the one by Ginsburgh and van Ours (2003) who investigated indicatiors of success in the Queen Elizabeth Piano Competition. They showed that the randomly assigned order in which competitors perform influences the result of competition. It means that random success in the competition affects success on market. A possible explanation of this phenomenon is that success in the competition serves as a focal point for conformist consumers rather than a token of talent.

There is yet another different field of study, in which determinants of success are measured, namely sports. Its industry is believed to be related enough to display patterns similar to those in art. Franck and Nuesch (2008) check the influence of on-field performance and media publicity on the emergence of soccer superstars in Germany. They used cross-sectional samples and assumed talent indicators exogenous proving that both talent (measure by professional expertise) and popularity increase demand for sport stars. Lehmann and Schulze (2008) adopted a similar approach and regressed salary proxies of 359 players on three performance measures and number of citations in an online magazine. They found evidence contrary to Franck and Nuesch: neither performance nor publicity explained salaries at the 5% significance level. Two years later those authors performed a similar study (Franck and Nuesch 2010) but allowed for the correction of teams. In that case, a single player’s talent was considered his contribution to the team output. A team production function was therefore estimated to detect critical elements that affect a team’s success. They found evidence that both talent and nonperformance-related popularity contribute to the market value differentials in German soccer league.

When adapting results of stardom studies in sports to art industry, one must bear in mind minor differences between those fields. The most important one is the competetive nature of sport. In a given competition, every sportsman must accomplish the same task. On the other hand, artists have more opportunities to express themselves and display talent without artificial limitations. Therefore, in art, unlike sports, there are no measurable standards. Moreover, talent in art is much harder to define. For example, some music appeals to a subset of listeners but not others, because the quality of arts is highly subjective. Nonetheless, both Rosen (1981) and Adler (1985) assume a homogenous consumer. They argue that heterogenity of tastes does not deteriorate the mechanisms of superstar emergence but confines a producer’s market, which means that consumers of similar preference comprise a market with characteristic stars.

The relationship between talent and popularity has been also measured in an exprerimental way. Salganik, Dodds and Watts (2006) conducted an experimental study in an artificial cultural market. 14,341 participants downloaded new songs either (the order assigned randomly) with or without knowledge of the previous participants’ choices. It turned out, that knowing choices of other “customers” contributed to inequality and unpredictability of the market. Social influence enhances the skewness of the market distribution and uncertainity of success. However, in this study the outcome yielded capricious even in a set up withou knowledge about download statistics. The authors concluded that no metric of a record’s quality can accurately forecast success.

As shown in this section, the literature on the relationship between talent and stardom is practically limited to a few fundamental theories. They are decidedly worth testing. However, many different aproaches remain to be applied.

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