Star Architects and Buyers' Choice Behavior in the Deep Pocket Market

Nobuya FUKUGAWA

Nobuya FUKUGAWA, Tohoku University, Japan

Nobuya Fukugawa is an Associate Professor at Graduate School of Engineering, Tohoku University. He received his PhD in Economics from Hitotsubashi University. His research interest includes innovation, entrepreneurship, and knowledge spillover. He published papers in international journals, including *International Journal of Industrial Organization*, *Technovation*, and *Journal of Technology Transfer*. He received the Best Paper in Asia-Pacific Small Business Management Award at the 55th Annual Conference of International Council for Small Business (ICSB) in 2010. As a Visiting Professor, he has taught at Libera Universita Internazionale degli Studi Sociali (LUISS), Ecole Superieure des Sciences Commerciales d'Angers (ESSCA), University of Strasbourg, and Kyungpook National University. Contact: nfukugawa@gmail.com

ABSTRACT

The superstar phenomenon where the most talented people receive vastly higher rewards than those with slightly less talent is prevalent across the entire economy. Although many empirical studies focus on the mass market where a large number of buyers pay a small amount of money for talent, little evidence has been provided for the deep pocket market where a small number of buyers pay greatly for talent. In this study architects were chosen as a sample representative occupation of the deep pocket market. Whether their success was determined by pure luck, assuming they were equally talented, was tested. The results show that concentrations of orders from clients to a small number of architects was not the result of luck. Unlike the mass market where the bandwagon effect (buyers' choice behavior to simply follow the crowd) has been observed in previous studies, clients appear to have chosen architects based on their talent.

Keywords: Superstar phenomenon, Architects, Deep pocket market, Yule distribution, Japan

1. INTRODUCTION

It has been known that, in the creative industries, the difference between the best and next best persons, even where there is a slight difference in talent, yields a huge difference in income. The generation of the distorted relationship between special skills and wealth distribution is called the superstar phenomenon and was already observed in economic literature in the eighteenth century. It was reintroduced into economic theory in 1980s, and since 1990s, a number of empirical studies on the subject have been conducted. The superstar phenomenon is spreading, seen not only in special occupational fields, such as singers, but also across society (Frank & Cook, 1995). In fact, superstardom can be observed for general talents, such as entrepreneurs and lawyers (Murphy, Shleifer, & Vishny, 1991) and even for institutions, such as art museums (Frey, 1998).

In this study I choose architects as a representative occupation of the deep pocket market where a very small number of buyers have a strong interest in the sellers' performance, and hence the sellers receive considerable reward from each buyer. The deep pocket market has been under-studied in the literature, unlike well-studied mass markets, such as the market for pop singers. Buyers' choice behavior in the deep pocket market appears to be quite sensitive to differences in sellers' talents. However, theory suggests that the superstar phenomenon may be explained by buyers' choice behavior to simply follow the crowd, known as the bandwagon effect. Using data on architectural works built in the 1980s and 1990s, this study examines how the actual distribution of output can be explained by a theoretical distribution predicted from a stochastic model that assumes that sellers are equally talented and buyers' choice behavior is explained by the bandwagon effect.

The remainder of the paper is organized as follows. Section 2 reviews previous theoretical and empirical studies on the superstar phenomenon and articulates the research gap in extant studies that this study attempts to fill. Section 3 describes the stochastic model that represents the bandwagon effect where buyers' choice behavior is affected by choices made by other buyers, and not by the talent of sellers. The dataset used for empirical analysis is introduced in the same section. Section 4 shows empirical results, while their implications are discussed in Section 5. Section 6 concludes the paper and offers agendas for future research.

2. LITERATURE REVIEW

The superstar phenomenon was recognized in the early stages of the development of economics as a field. Smith (1776, p. 167) argues that "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". He proceeds that "should the public opinion or prejudice ever alter with regard to such occupations, their pecuniary recompense would quickly diminish (Smith, 1776, p. 167)". Smith considered that the incredible incomes of singers and actors to be a kind of compensation for the disgraceful effect that they had on the moral standards of the time, and hence that the superstar phenomenon would disappear if they were not subject to such biased views. However, reality has proved different. Superstars' income has been increasing, seemingly limitlessly, though the prejudice against singers and actors has changed to adoration.

Marshall (1890, p. 685) argues that "the relative fall in the incomes to be earned by moderate ability, however carefully trained, is accentuated by the rise in those that are obtained by many men of extraordinary ability". He identified the demand and supply side causes of this phenomenon: the general growth of wealth and the development of new facilities for communication.

The advent of wealthy class in a society implies an increasing number of buyers who can afford to pay extraordinarily for special skills. The development of information and communication instruments, such as radio, implies that the most talented seller can dominate a huge market of special skills.

Rosen (1981, p. 845) defines superstardom as a phenomenon in which "relatively small numbers of people earn enormous amounts of money and dominate the activities in which they engage." He contended that the output concentration to a small number of individuals and the biased reward distribution in the economic activities are caused by imperfect substitution and technologies enabling joint consumption, which are the same supply and demand side causes proposed by Marshall. Imperfect substitution refers to the ability of relatively rich buyers to pay a premium, a higher than normal price, for goods and services provided by excellent sellers, and avoid dealing with slightly less excellent sellers, even if offered lower prices. The development of mass media, such as television, has promoted more buyers to simultaneously enjoy the talent of a smaller number of sellers.

Both Marshall and Rosen agree that talent that is superior to others matters in that buyers' choice behavior responding sensitively to a slight difference in sellers' talent generates the superstar phenomenon. Adler (1985), however, argues that superstars need not have superior talent to others. According to his argument, the superstar phenomenon is an economic solution of buyers who choose goods and services that require knowledge for consumption (Stigler & Becker, 1977) and are trying to minimize their search costs. For instance, the consumption or learning of very unpopular novels or movies is more costly because time spent seeking partners who share the same interests will be greater. The point of his argument is that buyers' choice behavior is determined not by the sellers' talent but by the choice behavior of other buyers, which implies the bandwagon effect. Therefore, the superstar phenomenon could occur independently of the differences in the sellers' talent.

Since 1990s, a number of empirical studies on the superstar phenomenon have been conducted. One stream of empirical research is the demand function approach to estimate talent elasticity of demand. They attempt to elucidate how sensitively buyers respond to a slight difference in sellers' talent, an approach theoretically formulated by Marshall and Rosen as imperfect substitution. Hamlen (1991, 1994) examines the superstar phenomenon in the pop music market by estimating the talent elasticity of demand. Taking the voice quality of pop singers as a proxy variable for talent, he finds that the talent elasticity of demand is larger than zero but smaller than one. This suggests that buyers certainly admire the sellers' talent, but that the degree of admiration is not high enough to support the contention of imperfect substitution where the demand becomes larger to a greater extent than the talent becomes higher. He interprets these results by inferring that pop music buyers pay attention to factors other than the voice quality, such as the singer's race. In this respect, the results of Hamlen (1991, 1994) are partly consistent with the hypothesis of Adler (1985) that the superstar phenomenon could arise due to factors other than talent. As it is difficult to accurately measure talent in the market for artistic works, this empirical approach has been relatively less used in studies of superstardom.

A more prevalent empirical approach to address superstardom is to examine statistical fit between the actual distribution of outputs and a theoretical distribution predicted from a stochastic model that represents the generation of the bandwagon effect, first proposed by Adler. Chung and Cox (1994, 1998) and Cox and Falls (1998)

examine Adler's hypothesis that the superstar phenomenon is caused by minimization of buyers' search costs. By assuming a uniform quality of talent, they explain the buyers' consumption behavior in which buyers choose the most famous sellers to minimize search costs. They use the Yule-Simon stochastic model, first proposed by Yule (1924), to represent this behavior and examine its validity. Their results show that Adler's hypothesis is valid for pop singers and movie actors, but not for professional golfers. In this respect, Chisholm (1997) shows that the talent of movie actors is not a key factor in the output concentration on a small number of superstars. Together with the results of Hamlen, these results imply that Adler's hypothesis is particularly true of buyers' choice behavior in a mass market (defined later).

Most studies have focused on the demand side factors contributing to the superstar phenomenon. Borghans and Groot (1998) explore a supply side factor, that is, joint consumption technologies represented as mass media. They consider that a limited number of superstars receive exceptional income, irrespective of intense competition, not only because they have outstanding talent, but also because they have monopoly power through the media. The media stars, those with monopoly power given by the media, represent the occupations in which they are engaged as well as showing us their talent. A glaring example of such media stars was Michael Jordan in the NBA. Michael Jordan benefited not only the team to which he belonged but also other teams via the improvement of viewer ratings. The NBA and some professional sport organizations introduced a salary cap to correct biased allocation of resources stemming from superstar externality (Hausman & Leonard, 1997).

Table 1 summarizes the key outcomes from theoretical and empirical studies on superstardom. The first row and the first column respectively indicate theoretical perspectives representing demand and supply side factors. Empirical studies are classified according to the importance of joint consumption technologies in occupations examined and which factor was found to be dominant in buyers' choice behavior. Table 1 shows that empirical studies chiefly focus on professional athletes, pop singers, and movie actors. These occupations are characteristic in that buyers do not cling to the sellers' talent and do not pay much money to them. Meanwhile, the market involves a relatively large number of buyers and hence the superstars receive enormous rewards. Such a market is called a mass market (Frank & Cook, 1995).

Table 1. Theoretical viewpoints in superstardom studies and occupations empirically examined

Supply of talent	**Buyers' choice behavior**	
	"Talent matters." Marshall (1898), Rosen (1981)	**"Factors other than talent matter." Adler (1985)**
"Media (e.g. TV) is an important channel". Borghans & Groot (1998)	Golf (Cox & Falls, 1998)	*Mass market* Pop music (Hamlen, 1991, 1994; Chung & Cox, 1994; Strobl & Tucker, 2000; Krueger 2005) Movies (Chung & Cox, 1998; Albert, 1998; De-Vany & Walls, 1997; Collins & Hand, 2006) Soccer (Lucifora & Simmons, 2003)
"Media is not important."	Doctors, security analysts (Cox & Kleiman, 2000)	*Deep pocket market* Lawyers (Biddle & Hamermesh, 1998)

On the other hand, occupations like doctors form a market that has a relatively small number of buyers who have a strong interest in the sellers' performance, and hence the sellers receive considerable reward from each buyer. This type of market is called a deep pocket market (Frank &

Cook, 1995). Compared to mass market studies, the superstar phenomenon in the deep pocket market has been less explored by empirical analyses. One exception is Biddle and Hamermesh (1998). They find that good-looking lawyers obtain more rewards than other lawyers and lawyers belonging to private law firms have a better appearance than those who work in public offices. This implies that, even in the deep pocket market, factors other than talent can yield a biased income distribution among lawyers, which is consistent with the argument of Adler.

In light of economic theory and empirical findings on superstardom, this paper is the first to examine the superstar phenomenon in the deep pocket market, using a sample of Japanese architects. Specifically, this study attempts to examine the hypothesis of Adler (1985) that a biased distribution of orders of architectural works to architects can be observed, even though equal talent among architects is assumed. Buyers in the deep pocket market are predicted to be more sensitive to differences in sellers' talent than buyers in the mass market. However, as Biddle and Hamermesh (1998) show, it is possible that the bandwagon effect is working even in the market for architectural works.

3. METHODOLOGY

As Cox and Falls (1998) argue, the Yule-Simon stochastic model represents Adler's hypothesis on superstardom. This study employs this stochastic model to quantitatively examine whether the output distribution of architects follows a Yule distribution, which is described as follows (Simon, 1955, p. 426).

$$F(i) = \Psi B(i, \rho+1) \qquad (1)$$

$F(i)$ denotes the ratio of architects who receive i orders. Ψ and ρ are constants. $B(i, \rho+1)$ is the standard Beta function.

The following shows the case where clients' choice behavior follows the Yule distribution. N architects with equal talent compete with each other to receive orders from clients, whether they are in the form of bidding, competition, or negotiated contract, and the clients choose the architects in order. When the last client in the first round selects an architect, the second round starts. In this process the following assumptions are made. First, the probability that the k+1th client selects the architect who is already chosen by i out of k clients is proportional to i. That is to say, a slight concentration on a superstar candidate will increasingly grow and render the candidate a real superstar architect. Second, the probability that the architect who does not receive any orders from k clients will receive the k+1th order is given by $\rho=1/(1-\delta)$ where δ is a constant. When δ is sufficiently small to make ρ close enough to one, Equation 1 can be approximated as

$$f(i)=[i(i+1)]^{-1} \qquad (2)$$

According to Equation 2, if the output distribution of architects follows the Yule distribution, architects who received orders only once occupy 50% of all architects since $f(1)=1/(1+1)=0.5$.

It is desirable to obtain information on all officially registered architects' income and use that data to represent their output distribution. Nakazato, Ramseyer, and Rasmusen (2010) link information on the billionaire's list in Japan, which used to be disclosed before the enactment of the Private Information Protection Law in 2005, to a comprehensive list of officially registered lawyers, in order to examine determinants of lawyers' income. Unfortunately, this empirical approach is not possible for this study as a comprehensive list of the first class architects was not publicly available. Instead, this study measures the success of architects as receiving orders of major architectural works

with artistic quality through competition among peers. Information was collected from Gallery Ma, "Architecture Map" of Tokyo, Osaka, Kobe, Kyoto, and Kitakyushu, each of which was published in the late 1990s (Gallery Ma, 1994, 1998a, 1998b, 1999). They selected major architectural works in big cities, owned by individuals, firms, and the public sector. Information was collected for architects and collaborators of 1197 architectural works completed after 1980. Thus, the study period runs from 1980 to 1999. Table 2 shows the number of orders received by major architects.

Table 2. The number of orders received by leading architects

Architects	Frequency
Nikken Sekkei	34
Ando, Tadao	32
Takenaka Corporation	29
Sakakura Associates	20
Takamatsu, Sin	18
Kurokawa, Kisho	15
Maki, Fumihiko	15
Isozaki, Arata	14
Kitagawa, Atsushi	13
Murano, Togo	11
Wakabayahi, Hiroyuki	11
Izue, Kan	10
Uchii, Shozo	10
Kajima Design	10
Kitayama, Kojiro	10
Kudo, Kazumi	10
Suzuki, Edward	10
Takahara, Yoshiji	10
Yokogawa, Ken	10
Yoshimura, Tokuichi	10
Hayakawa, Kunihiko	9
Komiyama, Akira	8
Hara, Hiroshi	8
Miyawaki, Mayumi	8
Architect Five	7
Ito, Toyo	7
Endo, Takao	7
Ohoe, Tadasu	7
Takasago, Masahiro	7
Funakoshi, Toru	7
Murofushi, Jiro	7

4. RESULTS

Table 3 shows the actual and theoretical number of architects that receive an order from clients. The first and third columns respectively present the actual number and percentage of architects for each quantity of orders received, while the second and fourth columns respectively show the estimated number and percentage of architects for each quantity of orders received, with the assumption that the number of orders received follows the Yule distribution. Table 3 indicates that 57.78% of all architects receive orders only once. Only 20 architects, 4.26% of the total, receive orders 10 times or more and the orders that they received occupy 25.23% of all orders. Table 3 shows that the distribution of orders for architects is highly skewed to the left, which suggests the presence of the superstar phenomenon.

To examine whether this order distribution fits the Yule distribution function, the chi square test was conducted by using the observed and estimated values in Table 3. To perform the chi square test, the estimated value needs to be greater or equal to five (Chung & Cox, 1994, p. 774). Therefore, the empirical observations are limited to those with the number of orders received is less than or equal to nine. This means that the estimated value is greater than 5.21. The calculated chi squire value is 19.64, which is smaller than Chi-square(8)=20.09 at a one percent level of statistical significance and greater than Chi-square(8)=15.50 at a five percent level of statistical significance. Thus, it is difficult to assert that the presence of superstar phenomenon resulting from equal talent among architects is confirmed from the dataset. This may stem from analytical constraints under which some of the information must be ignored to conduct the chi square test.

Therefore, using all information, the superstar phenomenon in the market for architectural

Table 3. The number of orders received by architects

The number of orders received	The number of architects	Estimated number of architects	Actual ratio	Estimated ratio
34	1	0.39	0.21	0.08
32	1	0.44	0.21	0.09
29	1	0.54	0.21	0.11
20	1	1.12	0.21	0.24
18	1	1.37	0.21	0.29
15	2	1.95	0.43	0.42
14	1	2.23	0.21	0.48
13	1	2.58	0.21	0.55
11	2	3.55	0.43	0.76
10	9	4.26	1.92	0.91
9	1	5.21	0.21	1.11
8	3	6.51	0.64	1.39
7	7	8.38	1.49	1.79
6	12	11.17	2.56	2.38
5	17	15.63	3.62	3.33
4	35	23.45	7.46	5.00
3	39	39.08	8.32	8.33
2	64	78.17	13.65	16.67
1	271	234.50	57.78	50.00

works was examined from a different perspective. According to Chung and Cox (1994, p. 774), an approximation to the Yule distribution can be described as follows.

$$\log[f(i)/f(1)] = -(\rho + 1)\log(i) \quad (3)$$

They derive the following regression model from Equation 3.

$$\log[f(i)/f(1)] = \alpha + \beta\log(i) + \varepsilon \quad (4)$$

If the Yule distribution with ρ=1 represents the distribution, α and β should be zero and -2, respectively, and statistically significant. Equation 4 is estimated using ordinary least squares and the results are as follows. Figures in parentheses are t-values.

$$\log[f(i)/f(1)] = 1.405 - 1.736\log(i)$$
$$(8.37) \quad (-10.69)$$
$$\textit{Adjusted } R^2 = 0.863 \quad F(1,17) = 114.35$$

The results show that α is positive at a one percent level of statistical significance. According to the t-test, the null hypothesis that β is equal to -2 is rejected at a one percent level of significance. This indicates that the Yule distribution does not represent the distribution of orders received by architects.

5. DISCUSSION

The results show that the distribution of orders from clients for architects is highly skewed, but it is difficult to find hard evidence for Adler's hypothesis that the superstar phenomenon comes from the bandwagon effect. As noted in Section 3, the stochastic process modeled in this study assumed equal talent of sellers. However, unlike the mass market where the bandwagon effect has been observed by previous studies, clients of architectural works may have made their choice of architects in consideration of their talent, which is consistent with the notion of Marshall and Rosen.

If talent does matter in the market for architectural works, empirical research based on the demand function approach to estimate talent elasticity of demand is needed to understand how much it matters. As I have mentioned in Section 2, this approach requires one to define and measure talent in the market for architectural works accurately, which is quite difficult because special skills of architects tend to be built on symbolic knowledge rather than analytical knowledge (Asheim, Coenen, & Vang, 2007). Special skills are multifaceted as well. They may vary greatly according to types of buildings, such as public architecture, office building, or religious architecture. Furthermore, team production may matter by type of project, which suggests that talent encompasses managerial skills as well as an artistic feeling. Future research should collect diversified and qualitative information about the skill formation process of architects, rather than

focusing on a single factor, such as the voice quality employed by previous studies.

Another interpretation is that the number of orders of major architectural works through competition among peers may not be appropriate as a performance index of architects. In fact, introducing different performance indices could drastically changes the results, even when using the same stochastic process as an empirical model. Giles (2006) employed two different performance indices (i.e. the number of weeks that recordings stayed on the top of the Billboard Hot 100 Chart and the number of number one hits achieved by an artist) from Chung and Cox (1994), who had used the number of Gold Records given by the Recording Industry Association of America, and found no superstardom in the market for pop singers, even though he used the same empirical model as Chung and Cox (1994). In concluding the paper, he stressed that the measurement problem was critical for the study of superstardom. In the context of the market for architectural works, this suggests that it is important to collect qualitative information about the actual process of ordering by clients and more comprehensive data on architects and their outputs, such as income, which should be pursued by future research.

Furthermore, it is possible that the superstar phenomenon in the market for architectural works follows other stochastic process than the one employed in this study. Recent studies show that the generalized and extended Yule distribution could capture superstardom more accurately (Martínez-Rodríguez, Sáez-Castillo, & Conde-Sánchez, 2011; Spierdijk & Voorneveld, 2009) by relaxing the constraints of the Yule distribution to enable it to better fit with the higher quantile of the empirical distribution. The development of stochastic processes that represent superstardom more accurately is under way, and future research should test these approaches.

Last, future research should incorporate spatial concentration of talents in the market for architectural works, which might add externalities to architects in clusters. As I have mentioned before, the special skills of architects tend to be built on symbolic knowledge (Asheim, Coenen, & Vang, 2007). These characteristics must affect the spatial configurations of architectural talents as the nature of valuable knowledge in such occupations tends to be tacit and hard to transfer via codified channels like documents, which promotes the spatial concentration of talents in search for frequent personal interactions. This implies that architects located in a cluster would be able to receive knowledge spillover (i.e. externalities) from other architects through personal interactions, making them more productive. Examining the market for architectural works in UK, Tether, Li, and Mina (2012) find that locating in clusters like inner London provides significant financial benefits to architects but not to engineers whose special skills tend to be built on analytical knowledge. It is likely that Tokyo retains the same characteristics as London as a creative milieu and adds externalities to architects who work there, as quantitatively confirmed in the case of lawyers (Nakazato, Ramseyer, & Rasmusen, 2010). Future research should consider whether and how locating in a cluster adds externalities to architects and promotes superstardom in the market for architectural works.

6. CONCLUSION

The superstar phenomenon is the term for cases where the most talented people receive vastly higher rewards than those with slightly less talent and the difference in the rewards appears much larger than that in the talent. Although this phenomenon has often been observed in the mass market like the market for pop music, it has also surfaced in various other occupations in recent years. In this study I chose architects as a representative occupation of the deep pocket market

and examined whether the actual distribution of output could be explained by a theoretical distribution predicted from the stochastic model that assumed sellers to be equally talented and buyers' choice behavior to be affected not by talent but by choices made by other buyers.

The results show that the distribution of orders from clients for architects was highly skewed, but it was difficult to find hard evidence for the superstar phenomenon coming from the bandwagon effect. This implies that clients made choice of architects in consideration of their talent, which is consistent with the theoretical prediction of the buyers' choice behavior in the deep pocket market. Alternative interpretations would be that the choice of a performance index and stochastic model had affected the results. Future research should not only collect information on the actual process of ordering by clients and more comprehensive data on architects and their outputs, such as income, but should also incorporate examination of how the spatial concentration of architectural talents could accelerate superstardom into an analytical framework.

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