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ABSTRACT

Effect of participating in international co-production (ICP) in the film industry on social capital formation is evaluated by using coproduction-based social network constructed from Internet Movie Database (IMDb). By comparing social network structures' in Japan, China and Korea, I estimated how the experience of joining in ICP affects the centrality of professionals in social networks within each country's social network. OLS regression result shows, the social capital formation rate according to the degree of film-making experience is higher for ICP experienced professionals than non-ICP experienced professionals. This suggests ICP effect not only economically beneficial but also beneficial on fostering talented professionals.

Keywords: International Coproduce-production, Film industry, Social Capital, Network Analysis, IMDb

1. INTRODUCTION

Recently, in East Asia, the rapid growth of the creative industry induced severe shortage of talented professional workforce, including director, scripter, and producer. Securing human capital is crucial to the success in this highly competitive field. Nevertheless, the structure and dynamics of human capital development in creative industry is not yet well understood, to provide efficient program to accelerate human capital development. This lack of understanding is partly due to the complexity of creative work, and partly due to the fact that fostering creative talent needs longer time than other non-knowledge intensive industries.

In spite of such difficulty, the Government authorities are accelerating promotion measures in creative industry using various means. The wide range of promotion measures includes promotion of international coproduction (ICP). Since ICP is already recognized as effective method to gather financial-resources to produce a "big-budget" content, promotion of ICP is recognized as simply a consequence of economical rent seeking behavior. Although ICP may demonstrate good performance in acquiring financial-resources in the short term, it may have potentially adverse effect on non-financial aspects in long-term.

In order to formulate sound policy to promote creative industry, we need strong empirical evidence based on the empirical analysis of human capital development and its relationship with ICP. In this research, I will propose an evaluation of the dynamics of human capital development and social capital development in film industry. Namely, social capital formation rate between ICP experienced professionals and non-ICP experience professionals are compared, in order to empirically understand the effect of ICP on human capital development in creative industry. Chapter 2 overviews a background of international co-production of East Asian film industry. Chapter 3 reveals the methodology and Chapter 4 presents conclusions and discussions.

2. THE RISE OF INTERNATIONAL CO-PRODUCTION IN FILM INDUSTRY

In Japan, the institutional arrangement of international co-production (ICP) appeared in the 1950's after *"Rasho-mon"* (directed by Akira Kurosawa in 1950) won the best motion picture of the year at Venetia Film Festival. Within a few years, several ICPs including "Forever My Love"(Directed by Paul Sloane in 1952) followed by "*Madame Butterfly*" (Directed by Carmine Gallone in 1954) were accomplished between members of and Japanese film industries (Ting 2007). After the vicissitudes of ICP largely due to the fads, the number of ICP extended in full scale with the collapse of major studio system during 1970s. In the 1980s, film industry moved backward from the throne of the entertainment mainly because of pressure from the increased attention to television and home video. In the 1990s, the TV broadcast stations began to work on the film production in full scale, and the booming of film productions has

lasted until now.

From the legal perspective, in terms of a co-production, two or more persons agree to: a) collaborate and pool goods, rights or services in order to produce an audiovisual work of some kind, b) attribute ownership of the rights in respect of the audiovisual work resulting from such collaboration, and c) make use of the work jointly, and share the ensuing profits (or losses) in agreed proportions (Enrich (2005). Essentially, international co-production means co-production in which the coproducers are from different countries (Enrich 2005). The advantage of ICP lies on the fact that the film is produced by professionals with experiences in various countries who are well acquainted with the idiosyncrasies of each national markets; the work also has the advantage of being considered the "national audio-visual work" of a country, and therefore, may receive aid and subsidies from the countries of coproducers. However, ICP entails possible disadvantage in increased practical complexity of production, i.e. difficulty in communication and in understanding creative concepts, difference of work styles, and the need to conform different legal systems.

Besides its difficulty, the number of ICP increased dramatically in Asian countries especially in Japan, China and South Korea. As illustrated in Figure 1, the steep rise appeared in the 1990s, possibly due to the expansion of the Asian consumer market. From 1970 to 1989, the average annual number of ICP is 4.25 for Japan, 2.7 for South Korea, and 1.4 for China. However, after 1990 onward, the number rose up to 19.3 for Japan, 4.27 for South Korea, and 12.1 for China, that account for 6%, 8%, 19% of the whole film produced by respective countries. Within these ICP projects, as Figure 2 shows, the number of ICP spanning among these three countries are quite dominant and it may possibly affect organization structure in film industry in these countries.

==== Insert Figure 1 about here ====

==== Insert Figure 2 about here ====

3. EMPIRICS AND FINDINGS

In order to evaluate the effect of the rapid increase in ICP in East Asia, I collected data on all 11,767 feature films produced from 1970 to 2007 in Japan, China and South Korea, which included 7,658 professionals either as director, director of photography, screen writer. I collected these data using the Internet Movie Database (IMDb) (Zuckerman and Kim 2003; Ferriani, Corrado et al. 2005). This data is integrated with the Motion Picture Producer Association Japan database, Korean Film Council database, and all-cinema database (http://www.allcinema.net/) in order to fill missing data in IMDb.

From this compiled database, I computed the social network measures from network topology of

coproduction using an analysis of “actor-by-actor” networks derived from two-mode affiliation data in which the professionals are the actors and each film project are the event (Cattani, Ferriani et al. 2008). The judgment of ICP is based on whether two or more countries are registered as the country of production in IMDb. If a certain professional have ever involved more than one ICP in his/her career, he/she is considered as a professional with ICP experience, otherwise considered as a non-ICP (i.e. domestic) professional.

The social network resulted from these operations are illustrated for China, South Korea and Japan in Figure 3, 4, and 5 using spring-model-based visualization by NetDraw software. As the figure shows, professionals with ICP experiences marked by the red circle are placed in proximity of network center than domestic professionals marked by blue circle. For the degree distribution shown by the diameter of circles, in South Korea network, the actors with a large degree are dispersed (decentralized) compared to rather centralized network of China or Japan.

=== Insert Figure 3, 4, 5 about here ====

In order to understand effect of ICP on social capital development, OLS estimation is performed using three types of centralities (degree centrality, closeness centrality, betweenness centrality) as dependent variable. Those centraritis are calculated according to Wasserman and Faust (1994). These variables are considered as the proxy for the social capital formation. The amount of experiences (the number of film-makings involved) for professionals with ICP or non-ICP professionals was used as the independent variable. OLS estimation results are shown in Table 1, Table 2, and Table 3.

==== Insert Table 1, 2, 3 about here ====

The result shows that the formation of social capital of those who have experiences in ICP became more efficient according to the degree of experience in all three countries, although the degree and significance varies according to the type of centrality. In South Korea, as for the degree centrality, the social capital formation rate is lower for those who have experiences in ICP. Considering that the number of ICP itself is still small in South Korea compared to Japan or China (see Figure 1), international professionals may collocating to construct different subgroups (i.e. international subgroup is forming rather disjoint subset) and spillover of the experience from the former to the latter is not yet occurred. In Japan, as for the closeness centrality, the social capital formation rate is lower for those who have experiences in ICP. Considering that the rate is higher for those who have experiences ICP as for the betweenness centrality, this suggests the possibility that those in Japan who have experienced ICP play the role that connects clusters composed of domestic professionals. With few exceptions, the major trend is that the social

capital is more efficiently developed for those who have experienced ICP.

4. DISCUSSIONS

The analysis has shown that professionals' participations in ICP positively influence the social capital formed in East Asian countries, namely, Japan, China and Korea. Hence, it is suggested that ICP may contribute to human resource development. There are several ways to understand this phenomenon. Following the debates in innovation studies, we suggest two lines of explanations. The first explanation is that ICP allows the participants to benefit from the human capital embodied in the high-skilled foreign participants (Møen 2005). Those foreign participants may provide fine-grained information about their organizational routines (Becker, Lazaric et al. 2005). The second explanation is that foreign partners provide the ICP participants with their outside contacts or networking as the conduit for accessing complementary human resources for their film production. Such network-mediated information flows may be especially important when information transfer requires trust among collaborators.

Overall, since economic linkage is being strengthened among East Asian countries, film production in those countries appears to follows the same direction. However, when considering possible public support for fostering human resources in creative industries, it should be recognized that international collaboration would possibly contribute to the formation of social capital in each country.

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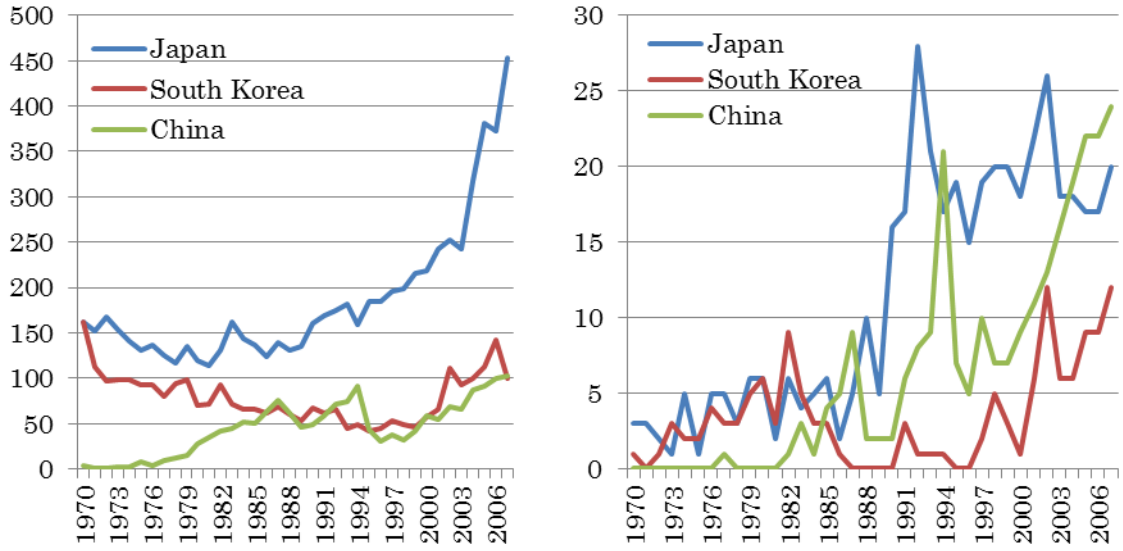

Figure 1 Number of film produced (left) and number of ICP films produced (right)

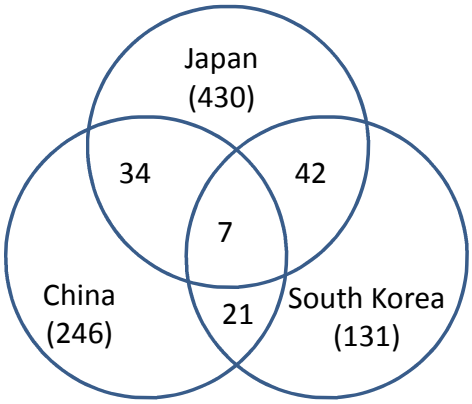

Figure 2 Number of International Co-productions (ICP) from 1970 to 2007.

* Numbers in parentheses indicate overall ICP in each country.

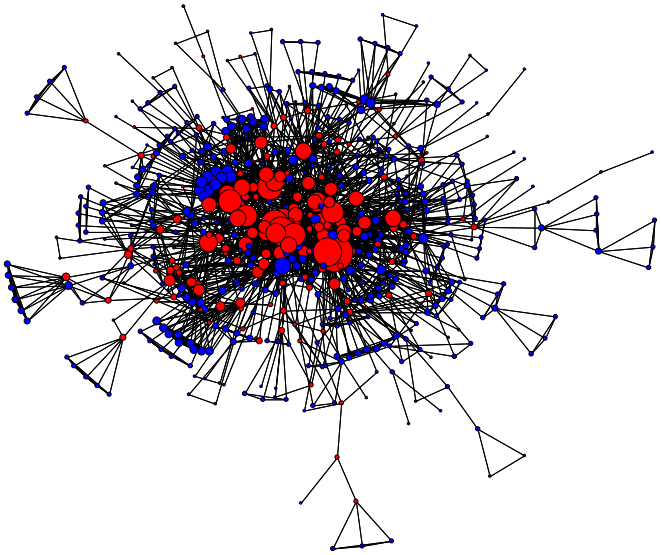

Figure 3 Collaboration network formed in Chinese film industry

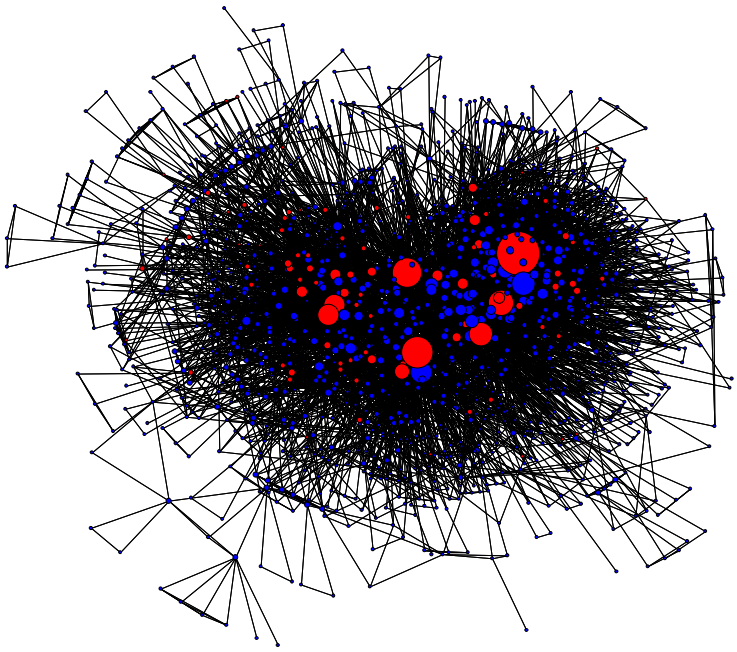

Figure 4 Collaboration network formed in Korean film industry

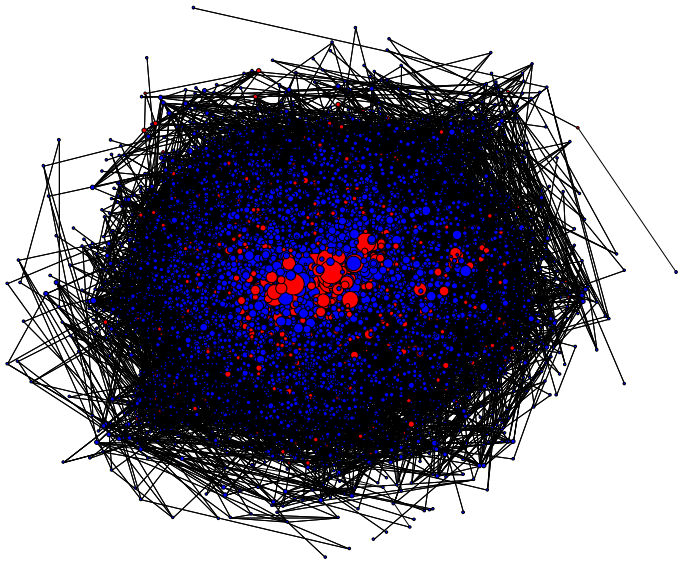

Figure 5 Collaboration network formed in Japanese film industry

Table 1 Social capital formation model 1 (Degree Centrality)

	China		Korea		Japan	
	Domestic	International	Domestic	International	Domestic	International
Dependent Variable: $\text{Centrality}_{\text{Degree}}$						
Independent Variables:						
Experience	0.112 *	0.468 ***	0.105 ***	0.068 ***	0.037 ***	0.041 ***
	(0.044)	(0.065)	(0.006)	(0.012)	(0.002)	(0.003)
Intercept	0.744 ***	0.837 ***	0.251 ***	1.108 ***	0.069 ***	0.135 ***
	(0.062)	(0.148)	(0.017)	(0.150)	(0.005)	(0.017)
N	447	159	1178	96	5270	508
R^2	0.044	0.463	0.821	0.778	0.572	0.691
Adj-R^2	0.042	0.459	0.82	0.775	0.572	0.691

Table 2 Social capital formation model 2 (Closeness Centrality)

	China		Korea		Japan	
	Domestic	International	Domestic	International	Domestic	International
Dependent Variable: $\text{Centrality}_{\text{Closeness}}$						
Independent Variables:						
Experience	0.644 **	0.819 ***	0.313 ***	0.052 *	0.358 ***	0.173 ***
	(0.198)	(0.091)	(0.053)	(0.022)	(0.022)	(0.017)
Intercept	23.233 ***	26.295 ***	28.344 ***	32.17 ***	22.282 ***	24.597 ***
	(0.332)	(0.404)	(0.191)	(0.426)	(0.066)	(0.175)
N	447	159	1178	96	5270	508
R^2	0.034	0.278	0.262	0.225	0.178	0.266
Adj-R^2	0.032	0.273	0.261	0.217	0.177	0.265

Table 3 Social capital formation model 3 (Betweenness Centrality)

	China		Korea		Japan	
	Domestic	International	Domestic	International	Domestic	International
Dependent Variable: $\text{Centrality}_{\text{Betweenness}}$						
Independent Variables:						
Experience	0.203 ***	0.565 ***	0.039 ***	0.052 ***	0.023 ***	0.045 ***
	(0.041)	(0.093)	(0.005)	(0.012)	(0.003)	(0.008)
Intercept	-0.165 **	-0.118	-0.024 +	0.391 *	-0.026 ***	-0.065
	(0.051)	(0.206)	(0.013)	(0.160)	(0.006)	(0.045)
N	447	159	1178	96	5270	508
R^2	0.305	0.474	0.439	0.543	0.399	0.441
Adj-R^2	0.303	0.47	0.438	0.538	0.399	0.44