The rise of the chaebol: A bibliometric analysis of business groups in South Korea

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Abstract: South Korea has become one of the most important economies in Asia. The largest Korean multinational firms are affiliated with influential family-owned business groups known as the chaebol. Despite the surging academic popularity of the chaebol, there is a considerable knowledge gap in the bibliometric analysis of business groups in Korea. In an attempt to fill this gap, the article aims to provide a systematic review of the chaebol and the role that business groups have played in the economy of Korea. Three distinct bibliometric networks are analyzed, namely the scientific collaboration network, bibliographic coupling network, and keyword co-occurrence network.

Keywords: chaebol, business groups, South Korea, bibliometric analysis, network analysis

Subject classification codes: D2, D4, D8, F2, G3, L1, L2

1. Introduction

South Korea has become one of the largest and most important economies in Asia. Korean multinational firms are a major source of innovation and investment flows, both regionally and globally. Korea's prominent family-owned business groups are known as the chaebol. In the last decades, the chaebol have attained the spotlight of economic sciences, much like the Japanese keiretsu networks had done since the 1980s (Tomeczek, 2022).

Despite the surging academic popularity of the chaebol, there is a considerable knowledge gap in the bibliometric analysis of business groups in Korea. This article attempts to fill this gap. Bibliometrics is currently one of the most popular ways of conducting empirical studies of scientific collaboration as well as systematizing and mapping existing knowledge. Such studies can be based on quantitative data representing collaborations between scientists or institutions (co-authorship networks), keywords assigned to scientific articles (keyword co-occurrence networks), and scientific citations (citation networks, bibliographic coupling networks, and co-citation networks).

Using the bibliometric methodology, this article aims to provide a systematic review of the chaebol and the role that business groups have played in the economy of Korea. To fulfill this aim, three research questions are stated. [RQ1] Which connections are the most influential in the scientific collaboration network? [RQ2] How many communities are there in the bibliographic coupling network and what are their characteristics? [RQ3] What are the main themes of analysis in the keyword co-occurrence network? The answers to these questions are relevant to the systematization of academic research on chaebol groups.

This article is divided into six sections. The research methodology is detailed in section two. Section three provides a broad historical background to chaebol groups and the economic development of Korea. Section four explores the results of the bibliometric

analysis. Implications of the research are discussed in section five. The final section concludes the article.

2. Methodology

Bibliometric networks

The origins of bibliometric and scientometric analysis can be traced to the seminal works of Garfield (1955), Kessler (1963a, 1963b), Price (1965), and Small (1973). Over the decades, and with the evolution of digital technologies, bibliometrics has gained numerous tools that provide new and exciting opportunities for researchers.

To answer the first research question, a co-authorship network is constructed based on the data aggregated to the level of country/territory. The network consists of nodes (vertices) representing countries/territories and edges (links) representing the number of co-authored articles. Co-authorship networks, at different levels of aggregation, are likely the most common type of network in bibliometric studies (Abbasi, Hossain, & Leydesdorff, 2012; Barabási et al., 2002; Beaver & Rosen, 1978; Gazni & Didegah, 2011; Glänzel, 2001; Glänzel & Schubert, 2001, 2005; Newman, 2001; Uddin, Hossain, Abbasi, & Rasmussen, 2012; Yan, Ding, & Zhu, 2010).

Bibliographic coupling provides the answer to the second research question. In this particular network, nodes are articles and edges connecting them are sources referenced in both articles. Bibliographic coupling networks can be used to identify clusters of publications that are based on the same underlying concepts (Chen, Zhang, & Fu, 2019; Fernandes & Ferreira, 2022; Yadav, Kumar, & Malik, 2022; R. Zhang & Yuan, 2022). The results of bibliographic coupling analyses tend to be relatively similar to co-citation networks (Yan & Ding, 2012).

The main themes of analysis, explored in the third research question, are identified using a keyword co-occurrence network. Nodes represent keywords and edges represent the fact that they are assigned to the same article. Keyword co-occurrence networks are a popular way to conduct thematic knowledge mapping of the existing body of literature (P.-C. Lee & Su, 2010; Oliveira, Carvalho, & Reis, 2022; Su & Lee, 2010; Szczech-Pietkiewicz, Radło, & Tomeczek, 2023; Wang, Huangfu, Dong, & Dong, 2022).

Data collection and previous studies

A systematic and transparent data collection process is of paramount importance for bibliometric analysis. Scopus, a popular database, is used to collect bibliometric data. Following numerous bibliometric studies on various topics (Fernandes & Ferreira, 2022; Jiang, Ritchie, & Benckendorff, 2019; P.-C. Lee & Su, 2010; Li et al., 2021; Su & Lee, 2010; Velez-Estevez, García-Sánchez, Moral-Munoz, & Cobo, 2022; Wang et al., 2022; Xu, Hou, & Wang, 2022; Yadav et al., 2022; X. Zhang, Xie, Song, & Song, 2022), the publications analyzed in this study are limited to peer-reviewed scientific articles published in English. Furthermore, the number of articles is limited to include at least one of the four subject areas relevant to business groups (Business, Management, and Accounting; Economics, Econometrics, and Finance; Social Sciences; Decision Sciences). To improve the reproducibility of the results, articles published after 2022 are ignored. The detailed search query string created for this article is provided in TABLE 1. It can be used in the "advanced search" in Scopus without any modifications. The search results are 749 articles (this includes both research articles and review articles). However, due to missing information on some articles, such as author keywords, the actual number differs depending on the need of the network (see: TABLE 1). This article also includes references to publications beyond the 749 chaebol-related articles identified in Scopus (i.e., bibliometric methodology, comparison

to Japanese keiretsu networks, and the general history of Korea), but those publications are excluded from the bibliometric analysis. The list of 749 articles is available in the associated dataset (Tomeczek, 2023).

As per the results of the search in the Scopus database, this article is the first study of its kind, utilizing bibliometric methodology in the analysis of the Korean chaebol groups. There are, however, previous bibliometric and scientometric studies based on Korean data focusing on other issues such as time allocation of academics (J.-K. Jung & Choi, 2022), collaborations between physicists (M.-J. Kim, 2001), collaborations with Chinese researchers (H. W. Park, Yoon, & Leydesdorff, 2016), online presence of scientific journals (Holmberg & Park, 2018), and knowledge creation and the triple helix model of innovation systems (H. Choe & Lee, 2017; Choung & Hwang, 2013; K.-S. Kwon, Park, So, & Leydesdorff, 2012; J. Yoon, 2015).

TABLE 1 Data collection process	S
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Results
749
719
705
583

Source: Own elaboration based on Scopus (Elsevier, 2023).

Data preparation and software

Modularity analysis is a popular method in the study of bibliometric networks. Its purpose is the identification of communities of nodes. This method can be applied to all three types of networks proposed in this article. Common examples include the clusters in international collaboration networks (showing the regionality in co-authorship), bibliographic coupling and co-citation networks (showing the influence of the authors), and keyword co-occurrence networks (showing common combinations of keywords).

Keyword standardization is a required step in data preparation for co-occurrence networks. Including closely related keywords as separate nodes in the network can distort the results. For this article, normalizations include synonymous keywords (e.g., "chaebol" and "korean business groups"), abbreviations (e.g., "foreign direct investment" and "fdi"), spellings (e.g., "globalization" and "globalisation"), and plural and singular forms (e.g., "family firms" and "family firm"). Additionally, some Korea-specific keywords are aggregated to their generic version, since all the analyzed articles are about Korea (e.g., "smes" and "korean smes"). Importantly, when a group of keywords is aggregated, the keyword with the highest occurrence count in that group is chosen as the name of the group. A list of all keywords (raw and aggregated) is provided in the associated dataset (Tomeczek, 2023).

The data downloaded from Scopus are imported into VOSviewer, a software for bibliometric analysis (van Eck & Waltman, 2010). The networks are then exported to Gephi which is used for network analysis and visualizations (Bastian, Heymann, & Jacomy, 2009). Gephi uses the algorithm of Blondel et al. (2008) for modularity calculations. In modularity analysis, resolution determines the size of the community. Gephi's modularity resolution is based on Lambiotte et al. (2014). Throughout this article normalized citation counts are used to facilitate comparison between newer and older articles. They are defined as "the number of citations of the document divided by the average number of citations of all documents published in the same year and included in the data that is provided to VOSviewer" (van Eck & Waltman, 2022, p. 38). Detailed results and high-quality graphs are included in the associated dataset (Tomeczek, 2023).

3. Overview of chaebol groups

Historical background and comparison to keiretsu networks

Korea's high rate of economic growth and rapid development caused a deserved spike in scientific interest. After the 1963 elections, the Park Chung-hee government's interventionist policies strongly reinforced the expansion of Korean exports (Haggard, Kim, & Moon, 1991; K.-Y. Jeong & Masson, 1990). For Korea, intra-industry trade is an important channel of business cycle synchronization with other Asian economies (K. Shin & Wang, 2004). Korean investment in China is geographically clustered and has a positive relationship with regional income, labor quality, low wages, the number of economic zones, and proximity to Korea (S. J. Kang & Lee, 2007). The negative interest rate policy of Japan caused an increase in stock prices in emerging Asian economies, but this effect was absent specifically for the Korean stock market (Fukuda, 2018). Human capital growth is stable and significantly contributes to the economic growth of Korea, despite the aging workforce (J.-S. Han & Lee, 2020). Haggard (2018) provides a comprehensive review of the leading theories explaining the economic growth of the East Asian developmental states.

In its rapid transition to an advanced economy, Korea has in many ways mirrored Japan's earlier economic miracle. Likewise, Korean chaebol groups are often compared to Japanese keiretsu networks, as both of them have garnered substantial interest from domestic and international scholars (Tomeczek, 2022). Much like in a keiretsu, firms affiliated with a chaebol form a network of cross-shareholdings. However, there are some important differences between the two – chiefly the role played by the banks. The chaebol have a more hierarchical structure. One of the key challenges faced by business groups in post-war Japan was the fact that holding companies were made illegal (Buckley, 2004; Kōsai, 1989). This created a substantial power vacuum in the market as holding companies were the core of the pre-war zaibatsu groups. After the American occupation of Japan had ended, this vacuum

was quickly filled by Japanese commercial banks as they supplied capital and leadership to the scattered firms of the former zaibatsu (Tomeczek, 2022). Inherently, keiretsu networks formed around the commercial banks, known as the main banks, at their center. The primary functions of the main banks are the provision of capital and monitoring the performance of firms through formal and informal ties (Aoki, Patrick, & Sheard, 1994; Sheard, 1994). In general, the chaebol have been more influential in Korea than the keiretsu have been in Japan (Campbell & Keys, 2002).

Internal markets and corporate governance

Due to restrictions on commercial bank ownership in Korea, business groups are characterized by an internal financing system (Almeida, Kim, & Kim, 2015; Hicheon Kim, Hoskisson, Tihanyi, & Hong, 2004; S. Park & Yuhn, 2012). Investments in non-bank financial firms by chaebol groups were commonplace (Hicheon Kim et al., 2004; Jiyoung Kim, 2017). Business groups have been shown to engage in the propping (negative tunneling) of financially distressed firms (G. S. Bae, Cheon, & Kang, 2008). During the 1970s, the Korean government provided massive financial aid to the largest chaebol groups through state-owned banks, at the expense of small and medium enterprises (Haggard & Moon, 1990).

The ownership of chaebol groups is much more centralized and hierarchical, and their central planning offices (holding companies) are still controlled by influential families (Almeida, Park, Subrahmanyam, & Wolfenzon, 2011; G. S. Bae et al., 2008; Byun, Choi, Hwang, & Kim, 2013; H. C. Kang, Anderson, Eom, & Kang, 2017; E. Kim, 2006; Oh & Park, 2001; C.-K. Park, Lee, & Jeon, 2020; S. Park & Yuhn, 2012). In that sense, the chaebol are more similar to the pre-war zaibatsu groups than the modern keiretsu networks. Acquisitions of new firms that are placed into the pyramidal structures of chaebol groups

have a negative impact on acquiring firms' stock prices (Almeida et al., 2011; K.-H. Bae, Kang, & Kim, 2002). As such, if the market expects future acquisitions by a chaebol firm to be at the expense of its minority shareholders, the stock of that firm will be undervalued. Korean companies usually have a lower price-earnings ratio (Ducret & Isakov, 2020). The relations between affiliated firms are complex and the controlling families do engage in intragroup tunneling (K.-H. Bae et al., 2002; Baek, Kang, & Lee, 2006; Oh, Yoon, & Kim, 2022) and propping (G. S. Bae et al., 2008). Alternatively, instead of tunneling, the position of the firms in the pyramid can be explained by their profitability before the acquisition, as highlyprofitable firms are more likely to be placed under the direct control of the family (Almeida et al., 2011). Family ownership concentration has a positive impact on chaebol firms' productivity, but non-chaebol firms tend to have higher productivity than chaebol firms (E. Kim, 2006). Internal transactions of chaebol groups can cause market distortions and deter potential entrants (Jin, 2020).

Executive compensation is less likely to be performance-related in chaebol firms compared to non-chaebol firms (Kato, Kim, & Lee, 2007), but the chance increases when a Korean firm has foreign investors (Garner & Kim, 2013). Foreign ownership has a positive impact on both innovation (Joe, Oh, & Yoo, 2019) and, specifically for chaebol-affiliated firms, bankruptcy likelihood (Jounghyeon Kim, 2020). The compensation of chief executives who are family members is generally substantially higher (Hohyun Kim & Han, 2018). Additionally, top-executive turnover in the largest chaebol groups is not tied to performance (Campbell & Keys, 2002). Intragroup executive transfers are common and many chief executives retain influence over their former companies (C. Kim, Park, Kim, & Lee, 2022).

Asian financial crisis and market liberalization

The 1997 Asian financial crisis simultaneously limited the scale of internal market financing

in chaebol groups (S. Lee, Park, & Shin, 2009) and caused a spike in their investments in non-bank financial firms (Jiyoung Kim, 2017). The existence of internal capital markets of the groups was beneficial to them during the crisis period (Almeida et al., 2015). Before the crisis, Korea experienced an investment boom focusing on the manufacturing sector which was financed primarily by extensive short-term corporate debt (Haggard & Mo, 2000). Despite heavy pressure to liberalize the economy, many of the developmental state policies have persisted after the financial crisis (Dalton & Rama, 2016; Ha & Lee, 2007; I. Jun, Sheldon, & Rhee, 2010; Y. S. Park, 2011). The crisis sparked many crucial changes in Korea, such as improvements in corporate transparency (J. Chang, Cho, & Shin, 2007; S. Choe & Pattnaik, 2007), the evolution of the general corporate culture (Cho, Yu, Joo, & Rowley, 2014), an increase in inward FDI (Fitzgerald & Kang, 2022), and the expansion of welfare state (H. K. Song, 2003). This period has also seen significant tax reforms (S. H. Park, 2022) and the restructuring of the service sector (S. I. Shin & Kim, 2020).

The chaebol have a non-linear (inverted U) impact on industry innovation (C.-Y. Lee, Lee, & Gaur, 2017; Mahmood & Mitchell, 2004). In this context, business groups are highly beneficial to technological catch-up when institutions are weak and technology has low appropriability (S. J. Chang, Chung, & Mahmood, 2006; C.-Y. Lee et al., 2017; Mahmood & Mitchell, 2004; K.-H. Park & Lee, 2006). Similarly, chaebol affiliation tends to positively influence affiliated firms' labor productivity (B. Jung, Lee, Rhee, & Shin, 2019). On the other hand, non-chaebol firms are shown to be more profitable (Joh, 2003) and have higher efficiency of government research and development grants (I. Kwon & Park, 2021) than chaebol-affiliated firms. Institutional blockholders negatively impact research and development investments (S. Kang, Chung, & Kim, 2019), but they also lower future information asymmetries (Chung, Kim, & Wang, 2022). Domestic blockholders tend to

improve corporate governance (K. Y. Lee, Chung, & Morscheck, 2020), unless they induce short-termism (Chung, Kim, & Lee, 2020).

The political power of the largest chaebol groups

Historically, the five largest chaebol were Samsung, LG, Daewoo, Hyundai, and SK (Campbell & Keys, 2002; S. Park & Yuhn, 2012). Since 1987, there have been numerous corporate governance reforms aiming to curb the dominant position of the chaebol (Oh et al., 2022). In 1999 the massively mismanaged Daewoo went bankrupt (Joongi Kim, 2008), but the other four continue their market dominance to this day. According to the Annual Report of the Korea Fair Trade Commission (2022, pp. 210–212), there are 71 Korean business groups large enough to be subject to disclosure requirements; 40 of them are subject to cross-shareholding restrictions and five of them have assets exceeding 100 trillion KRW (Samsung, Hyundai Motor, SK, LG, and Lotte).

As a member of the OECD's Development Assistance Committee, Korea is an important donor of official development assistance (E. M. Kim & Oh, 2012). As chaebol groups exert high formal and informal influence on Korean official development assistance, they can use it as a part of their international expansion strategy (Schwak, 2019). The appointment of politically connected outside directors to the board of chaebol firms increases their performance and lowers the risk, at the cost of some monitoring ability (J. Y. Shin, Hyun, Oh, & Yang, 2018). Outside directors have a lower survival chance on the board if they act proactively (T. Yoo & Koh, 2022). The presence of a banker interlocking director on the board of a chaebol-affiliated firm lowers its cost of debt (Nam & An, 2023).

The concentration of money and power increases the risk of corruption. The historical examples of corruption, cronyism, and state capture by influential chaebol groups are infamous and have been documented in numerous studies (Albrecht, Turnbull, Zhang, &

Skousen, 2010; Ha & Lee, 2007; I.-W. Jun, Kim, & Rowley, 2019; B.-K. Kim & Im, 2001; You, 2020; You & Park, 2017). Two recent examples featured in the media include the regulatory capture that likely contributed to the tragic sinking of the Sewol ferry in 2014 (You & Park, 2017) and the impeachment of President Park Geun-hye in 2016 (You, 2020). In general, politics in Korea is highly polarized (Al-Fadhat & Choi, 2023; S. Han, 2022; Oh et al., 2022).

The economic literature remains split on whether the impact of chaebol groups on their affiliated firms is ultimately positive or negative. There is, however, a strong consensus that these large conglomerates have been extremely influential during the rapid economic development of the Korean economy.

4. **Results of bibliometric analysis**

Prolific journals, institutions, and scientific collaboration

Based on the search in the Scopus database, the earliest English-language article was published in 1987 in California Management Review. It is a study of the chaebol management style (S. Yoo & Lee, 1987), that has since garnered 87 citations. GRAPH 1 shows the steady evolution of scientific interest in chaebol groups. Over the decades the number of publications has increased significantly. 2019 was the annual peak with 66 new articles, but 2022 is a close second with 62. The 2020-2021 slowdown is most likely associated with the pandemic-related disruptions. Scientific journals with the highest number of publications are Sustainability (40 articles), Pacific-Basin Finance Journal (24 articles), Asia Pacific Business Review (19 articles), Asia-Pacific Journal of Financial Studies (19 articles), Journal of Contemporary Asia (15 articles), Global Economic Review (14 articles), Emerging Markets Finance and Trade (12 articles), and Journal of Applied Business Research (11 articles). GRAPH 2 represents the scientific collaboration network. The size of nodes is determined by the number of articles assigned to a country/territory. Edges are scaled according to the co-authorship count. Nodes are only included if they have at least two articles and at least one connection to other nodes. The network is centralized around Korea and its collaborative endeavors with researchers affiliated with the United States (119 articles). Other directions of scientific collaboration are also important but remain significantly less prolific. These include Korea and the United Kingdom (19 articles), Korea and China (10 articles), Korea and Australia (7 articles), Korea and Canada (7 articles), and the United States and Singapore (7 articles).

Unsurprisingly, Korean universities and institutions are the main driving force of academic research into chaebol groups. The most common affiliations are Seoul National University (63 articles), Korea University (52 articles), Korea Advanced Institute of Science and Technology (44 articles), Yonsei University (41 articles), Chung-Ang University (33 articles), Korea University Business School (33 articles), Hanyang University (27 articles), Ewha Womans University (21 articles), Chung-Ang University Business School (20 articles), and KAIST College of Business (20 articles). The most common funding sponsors are the National Research Foundation of Korea (46 articles) and the Ministry of Education (28 articles).



GRAPH 1 The annual number of new scientific articles on chaebol groups

Source: Own elaboration based on Scopus (Elsevier, 2023).

GRAPH 2 Scientific collaboration network (size: number of articles, color: modularity class)



Source: Own elaboration based on Scopus (Elsevier, 2023).

Bibliographic coupling network and influential articles

In the bibliographic coupling network, communities are based on the analysis of the edges connecting the articles. If two articles both reference a substantial number of common third articles then it is likely that they are analyzing a similar topic or use comparable methodology. If these communities are distinct enough they might allow researchers to identify influential publications and concepts linking them together. This approach is similar to other reference-based analyses, such as co-citations networks. The following section is an attempt at systematizing the research trends in the existing literature on Korean business groups.

GRAPH 3 and GRAPH 4 visualize the bibliographic coupling networks. The former includes articles with more than 10 citations, while the latter limits that sample to articles with 200 or more citations. Color in GRAPH 3 represents the modularity class (community), while in GRAPH 4 color is determined by normalized citation count. In both networks, node size is determined by citation count and the labels are limited to the first author and year of publication. The results of the bibliographic coupling analysis are summarised in TABLE 2.

Starting with GRAPH 3, the network has 261 nodes (articles). Modularity analysis identifies five communities (resolution = 1.00). The three largest communities (241 articles in total) are highlighted in specific colors in the network (in the order of size: violet, green, and orange), while the two smallest ones are left gray (20 articles in total).

"Economic system," the largest community in the network, has 102 articles. Because of its size, the community includes articles on many aspects of the economic system of Korea. The primary theme of this group of articles is the developmental state – the role that the strong state played in the industrialization and rapid economic development of post-war Korea – and its eventual decline (Amsden & Hikino, 1994; Cherry, 2003; Hundt, 2014; Y. T. Kim, 1999, 2005; Kyung-Sup, 1999; S. J. Lee, 2008; S.-J. Lee & Han, 2006; H. Lim, 2009;

H.-C. Lim & Jang, 2006; Y. S. Park, 2011). Other notable issues include technological catchup (S. J. Chang et al., 2006; Hobday, Rush, & Bessant, 2004; K.-H. Park & Lee, 2006; Shiu, Wong, & Hu, 2014; J. Yoon, 2015), crony capitalism (Ha & Lee, 2007), the role played by the military (Glassman & Choi, 2014; Maman, 2002), and the impact of economic and financial crises (Hundt, 2014; Y. S. Park, 2011; Shim, 2002; J.-H. Yoo & Moon, 1999).

The second largest community has 83 articles. It explores issues related to "corporate governance," such as family ownership and ownership structure (Baek, Kang, & Suh Park, 2004; Byun, Hwang, & Lee, 2011; J. Chang & Shin, 2007; S. J. Chang, 2003; Joh, 2003; J.-K. Kang, Lee, & Na, 2010; W. Kim, Lim, & Sung, 2007; U. Lim & Kim, 2005), internal capital markets, tunneling, and propping (Almeida et al., 2015; G. S. Bae et al., 2008; K.-H. Bae et al., 2002; Baek et al., 2006; Y. K. Choi, Han, & Kwon, 2019; Joh, 2003; R. Kim, 2016; S. Lee et al., 2009; H.-H. Shin & Park, 1999), agency theory and the role of outside directors (Chizema & Kim, 2010; J. J. Choi, Park, & Yoo, 2007; B. Kim & Lee, 2003; Min, 2013; Min & Verhoeven, 2013; J. Y. Shin et al., 2018; T. Yoo & Rhee, 2013), and corporate social responsibility (B. B. Choi, Lee, & Park, 2013; D. Choi, Choi, Choi, & Chung, 2020; Y. K. Choi et al., 2019; Chun & Shin, 2018; Jang, Ko, Chung, & Woo, 2019; A. Kim & Lee, 2018; B. Yoon, Lee, & Byun, 2018).

With 56 articles, "business groups in emerging markets" is the third largest community. Notable topics include the business environment in emerging markets (Khanna & Rivkin, 2001; Hicheon Kim et al., 2004; Mahmood & Mitchell, 2004; Rowley & Bae, 2004), technological innovation (Y. Kim & Lui, 2015; C.-Y. Lee et al., 2017; Mahmood & Mitchell, 2004), internal transactions (S. J. Chang & Hong, 2000; Gaur, Pattnaik, Singh, & Lee, 2019), networks, international expansion, and multinational firms (Guillen, 2002; S. W. Jeong, 2016; S. W. Jeong, Jin, & Jung, 2019; Hicheon Kim, Kim, & Hoskisson, 2010; Y. Kim & Lui, 2015; J. Y. Lee, Ryu, & Kang, 2014; Y. Park, Yul Lee, & Hong, 2011; Rugman

& Oh, 2008). The study by Khanna and Rivkin (2001), the highest cited article in the entire bibliographic coupling network, is an international comparative study of business groups based on Korean data.

The two smallest communities are "learning and human capital" (13 articles) and "financial liberalization" (7 articles). The former focuses on learning organizations, human capital, and leadership (Joo & Lee, 2017; D. H. Lim & Morris, 2006; J. H. Song, Joo, & Chermack, 2009), while the latter is concerned with investment, capital structure, and financial constraints (Hyesung Kim, Heshmati, & Aoun, 2006; Koo & Maeng, 2005; Krishnan & Moyer, 1997).

GRAPH 4 is a filtered version of GRAPH 3 and includes only the articles with the highest number of citations. The connections are the strongest between two pairs of articles: (K.-H. Bae et al., 2002) and (Baek et al., 2004), as well as (Baek et al., 2004) and (J.-B. Kim & Yi, 2006), with 14 articles in common in both cases. The next strongest link, with 11 articles in common, is connecting (Khanna & Rivkin, 2001) with (S. J. Chang & Hong, 2000). There are also two edges with a weight of 10, and those are the connection between (K.-H. Bae et al., 2002) and (Joh, 2003), and the link between (Joh, 2003) and (Baek et al., 2004). These highweight edges between influential articles are predominantly linking nodes in the corporate governance community.

Compared to other articles in GRAPH 4, the study by Khanna and Rivkin (2001) has the most citations (930) and normalized citations (10.1). The articles with the highest normalized citation count in GRAPH 3 are two of the more recent studies. The first, with 111 citations and 10 normalized citations, explores the impact of corporate social responsibility on the market value of Korean firms (B. Yoon et al., 2018). The second, with 10 citations and 12 normalized citations, investigates the technology holding companies and the research activities of Korean universities (Son, Chung, & Yoon, 2022).

GRAPH 3 Bibliographic coupling network, articles with 10+ citations (size: citation count, color: modularity class)



Source: Own elaboration based on Scopus (Elsevier, 2023).

GRAPH 4 Bibliographic coupling network, articles with 200+ citations (size: citation count, color: normalized citation count)



Source: Own elaboration based on Scopus (Elsevier, 2023).

Number of articles	Community (color)	Notable themes	Highly cited articles	Citations	Normalized citations	
102	Economic system (violet)	economic systems, developmental	(Amsden & Hikino, 1994)	251	2.81	
		state, technological catch-up,	(S. J. Chang et al., 2006)	238	2.88	
		crisis, capitalism, neoliberalism,	(Hobday et al., 2004)	187	3.00	
		free market, industrialization,	(Kyung-Sup, 1999)	156	3.34	
		military	(KH. Park & Lee, 2006)	127	1.54	
	Corporate governance (green)	corporate governance, ownership	(KH. Bae et al., 2002)	628	10.00	
		structure, internal capital markets,	(Joh, 2003)	475	6.71	
83		tunneling, propping, family	(Baek et al., 2004)	436	6.99	
65		ownership, agency theory, outside	(S. J. Chang, 2003)	342	4.83	
		directors, executive compensation, corporate social responsibility	(Baek et al., 2006)	292	3.54	
	Business groups in emerging markets (orange)	emerging markets, multinational	(Khanna & Rivkin, 2001)	930	10.10	
		enterprises, business networks,	(S. J. Chang & Hong, 2000)	586	9.70	
56		internal transactions, international expansion, technological innovation	(Guillen, 2002)	289	4.60	
			(Hicheon Kim et al., 2010)	176	9.44	
			(Mahmood & Mitchell, 2004)	170	2.73	
	Learning and human capital (gray)			(D. H. Lim & Morris, 2006)	199	2.41
13		learning organizations, human capital, leadership, work engagement, career satisfaction	(J. H. Song, Joo, et al., 2009)	123	5.08	
			(Joo & Lee, 2017)	83	7.98	
			(Joo, Lim, & Kim, 2016)	67	8.89	
			(J. H. Song, Kim, & Kolb, 2009)	62	2.56	
	Financial liberalization (gray)	financial liberalization, investment, capital structure, financial constraints, corporate	(Krishnan & Moyer, 1997)	47	1.55	
7			(Hyesung Kim et al., 2006)	33	0.40	
			(Koo & Maeng, 2005)	28	1.31	
			(JW. Lee, Lee, & Lee, 2000)	27	0.45	
		debt	(Laeven, 2002)	25	0.40	

 TABLE 2 Bibliographic coupling network communities

Source: Own elaboration based on Scopus (Elsevier, 2023).

Keyword co-occurrence network and main themes of research

The analysis of keyword co-occurrence networks has become a popular method of

knowledge mapping. Unlike reference-based methods, research hotspots in co-occurrence networks are identified by analyzing the relationships between keywords. In this article, the network is based on author keywords. As shown in GRAPH 5, nodes represent keywords and their size is determined by occurrence count (the number of articles that a keyword occurs in). Edges represent the number of times two keywords co-occur. Much like in GRAPH 3, colors are determined by modularity class (community). Keywords are included if they occur in at least 2 articles For better readability, the labels are only shown for keywords that occur in 20 or more articles.

According to the occurrence count, the most common keywords are "chaebol" (352 articles), "south korea" (150 articles), "corporate governance" (90 articles), "financial crisis" (44 articles), "corporate social responsibility" (44 articles), "ownership structure" (32 articles), "innovation" (32 articles), "family firms" (30 articles), "developmental state" (30 articles), and "neoliberalism" (25 articles). As expected, the most significant edges are between "chaebol" and "south korea" (90 common articles) and "chaebol" and "corporate governance" (66 common articles). Degree centrality is the number of links to other keywords. The most connected keywords are "chaebol" (228 links), "south korea" (171 links), "corporate governance" (101 links), "financial crisis" (71 links), and "corporate social responsibility" (65 links).

As detailed in TABLE 3, the knowledge map has 12 thematic communities (resolution = 0.60). The largest community, with 59 keywords, is concerned with corporate governance and internal markets of chaebol groups. "Chaebol," the dominant keyword of the entire network (352 occurrences), is a part of this cluster. The research of corporate governance in business groups is primarily interested in ownership concentration, including the controlling family's stake, and the use of internal markets and related-party transactions.

Circular shareholding exacerbates the problems related to control-ownership disparity, tunneling (including propping), and agency problems.

The second largest community (53 keywords) comprises keywords related to the developmental state period of Korea and its subsequent liberalization. The focus lies on the institutional change and deregulation that occurred during the transformation from a developmental state to an advanced market economy. This cluster also includes keywords related to the globalization of Korea and its ties to other Asian economies, such as China, Japan, and Taiwan.

The next two communities consist of keywords related to corporate social responsibility, ESG, management, and accounting (26 keywords), and innovation, knowledge, learning, and patents (24 keywords). In total, the four largest communities (161 nodes) constitute 64% of the entire network (250 nodes).

The financial crisis in East Asia (19 keywords) is related to such keywords as investment, government regulation, credit ratings, the stock market, and performance. Various characteristics of Korean firms (18 keywords) include cash holdings, culture, capital structure, and risk. The information asymmetries and forecasts cluster (17 keywords) incorporates keywords like group affiliation, analyst following, banking sector, and forecast accuracy. Another community describes small and medium enterprises and business networks (15 keywords). Finally, the four smallest communities are earnings quality and sustainability (8 keywords), multinational firms and foreign direct investments (6 keywords), labor unions (4 keywords), and electronics suppliers (2 keywords).

GRAPH 5 Keyword co-occurrence network, keywords with 2+ occurrence count (size: occurrence count, color: modularity class)



Source: Own elaboration based on Scopus (Elsevier, 2023).

Number of keywords	Community (color)	Top keywords	Occurrence count	Degree centrality
59		chaebol	352	228
		corporate governance	90	101
		ownership structure	32	43
		family firms	30	52
		r&d	22	40
	Corporate governance and internal markets of chaebol groups (red)	related-party transactions	22	32
		agency problem	21	40
		control-ownership disparity	20	36
		emerging market	19	39
		firm value	19	33
		controlling shareholder	17	31
		internal capital market	15	20
		institutional blockholding	12	21
		tunneling	12	23
		diversification	11	17
	Developmental state and liberalization of Korea (blue)	south korea	150	171
		developmental state	30	51
		neoliberalism	25	42
52		institutional change	20	41
		china	13	34
		japan	13	31
		technological capabilities	13	21

TABLE 3 Keyword co-occurrence network communities

Number of keywords	Community (color)	Top keywords	Occurrence count	Degree centrality
		globalization	12	24
		taiwan	11	21
		economic development	10	19
		corporate social responsibility	44	65
		management	17	35
	Corporate social	competition	9	23
26	responsibility and FSG	environmentally sensitive industries	8	17
20	(vellow)	esg	8	20
	(Jensw)	accounting	7	21
		ceo	7	14
		discretionary accruals	7	19
		innovation	32	54
		human resource management	17	24
24	Innovation and knowledge	knowledge	13	20
24	(dark gray)	learning	12	32
		patent	10	21
		subsidiary performance	9	15
		financial crisis	44	71
		investment	22	35
19	Financial crisis in East Asia (dark blue)	government regulation	16	35
17		credit ratings	14	26
		korean stock market	8	18
		performance	8	21
		korean firms	13	29
	Characteristics of Korean	cash holdings	10	19
18	firms (orange)	culture	9	17
	initis (orange)	capital structure	8	18
		risk	7	18
	Information asymmetries and forecasts (pink)	information asymmetry	14	30
		group affiliation	13	24
17		analyst following	10	18
		banking sector	9	26
		forecast accuracy	9	13
		smes	19	49
		business network	8	20
15	SMEs and business networks	strategy	8	21
	(dark green)	networks	7	24
		resource-based view	7	21
		social network analysis	7	16
C C	Earnings quality and sustainability (green)	earnings quality	9	21
8		korean market	-7	19
ļ		sustainable corporate governance	7	16
_	Multinational firms and FDI	foreign direct investment	18	41
6	(light gray)	mnc	12	27
		asia	8	29
4	Labor unions (gray)	labor union	8	16
2	Electronics suppliers (gray)	electronics industry	2	4

Source: Own elaboration based on Scopus (Elsevier, 2023).

5. Implications

The bibliometric methodology provides tools for the large-scale systematization of existing knowledge. Quantification of research results has become increasingly important in academic research and evaluations. The bibliographic coupling network shows that scientific articles form distinct clusters around influential theories and studies. This can be used to trace the development of new theories, perhaps focusing on the more specialized aspects. Finally, the

keyword co-occurrence network maps the relationships between theoretical concepts, and, together with the lists of raw keywords and keyword aggregations provided in the associated dataset, can simplify the data collection process for future reviews and empirical studies of business groups.

International research collaboration is of paramount importance for research and development in both academic and corporate contexts. The list of prolific academic institutions should help to facilitate finding potential partners for university-industry collaborations. Business groups in Korea have traditionally been perceived as exploiters of their overwhelming market power. The fact that corporate social responsibility has gained a degree of prominence might suggest that systemic change had already occurred or will likely occur in the future. Similarly, the presence of foreign capital can alter the corporate governance of Korean firms. Whether these changes are positive (because they induce a shift to an incentive-based management style) or negative (because they dilute unique competitive advantages) is a different question entirely. Having said that, the strong internal markets of the chaebol remain one of their defining characteristics, despite international pressure and the government's attempts to regulate them. It does seem unlikely that Korean companies such as Samsung would have been able to successfully compete with American or Chinese multinationals had they not internalized so much of the market structures.

6. Conclusions

This article attempted to review and systematize the existing academic research on chaebol groups and their role in the economy of Korea. Business groups significantly contributed to the rapid economic growth during the developmental state period. However, due to their overwhelming market position, there have been numerous cases of corruption, cronyism, and state capture. Modern large business groups in Korea are heavily regulated and subject to

rigorous disclosure requirements. Currently, the five largest chaebol are Samsung, Hyundai Motor, SK, LG, and Lotte. Ultimately, the economy of South Korea would not be in the strong position it is today without the chaebol.

RQ1 is answered with a co-authorship network which showed that the three most influential connections are between Korea and its scientific collaborations with the United States (119 articles), the United Kingdom (19 articles), and China (10 articles). Prolific journals include Sustainability (40 articles), Pacific-Basin Finance Journal (24 articles), Asia Pacific Business Review (19 articles), and Asia-Pacific Journal of Financial Studies (19 articles). Accordingly, Korean universities, such as Seoul National University (63 articles), Korea University (52 articles), Korea Advanced Institute of Science and Technology (44 articles), Yonsei University (41 articles), and Chung-Ang University (33 articles), play a key role in the research of business groups.

With regards to RQ2, bibliographic coupling identified five network communities of articles: "economic system" (102 articles), "corporate governance" (83 articles), "business groups in emerging markets" (56 articles), "learning and human capital" (13 articles), and "financial liberalization" (7 articles). The answer to RQ3 is revealed using a keyword co-occurrence network. There are 12 thematic communities of keywords, including "corporate governance and internal markets of chaebol groups" (59 keywords), "developmental state and liberalization of Korea" (52 keywords), "corporate social responsibility and ESG" (26 keywords), "innovation and knowledge" (24 keywords), and "financial crisis in East Asia" (19 keywords). Based on the occurrence count, the top keywords are "chaebol," "south korea," "corporate governance," "financial crisis," and "corporate social responsibility."

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