Political Ties of Big Businesses in Time
A Multigenerational View from South Korea

ABSTRACT

This paper uses an unconventional source of evidence, marriage records of multi-generational business families, to examine their informal networking behavior over different political regimes in time. I find the inverse U shape in the frequency of political networking to peak at the late industrialization period under the military dictatorship, suggesting that political ties within family ties appear to have filled the "institutional voids" in the emerging market context. An event study around their wedding dates at daily level shows investors react especially to their political marriages with supra-normal returns, demonstrating the economic significance of these informal human networks.

INTRODUCTION

In economic history, South Korea marks nearly second to none in her rapid growth experience from the 1960s to the 1980s (Allen 2011). Whereas extensive discussions progressed on its macroeconomic features, state-led initiatives, or business group formations, the study of entrepreneurial traits from this period remains largely anecdotal or theoretical. The rapid industrialization with inchoate market structure provides a natural historical setting in which early stage entrepreneurs would pursue nonmarket strategy (i.e. political networking, or also known as contact capabilities) as their distinctive innovation to swiftly access, mobilize and combine resources under the restricted market. Ge, Carney, and Kellermanns (2018) posit that family ties are special in filling institutional voids under the emerging market contexts.

This plausibility is theoretically grounded in the contact capabilities hypothesis, stemming from the works of Amsden (1989) and Guillén (2001a, 2001b with Kock, 2010). In short, the ability of entrepreneurs to engage with government officials and other politicians not only mattered to the large-scale formation of their business groups — in terms of their rapid and repeated entries into unrelated sectors — from this period but also improved the economic profits and business prospects. Guillén (2001b with Kock) substantiates the Schumpeterian theory of contact capabilities in late industrialisation:

> Entrepreneurs in late development build a business group by engaging in a distinct type of innovation. Instead of creating new products they leverage local and foreign contacts to combine foreign technology and local markets… The capability to leverage contacts is broadly applicable to diverse industries, creating incentives for unrelated diversification… This is in marked contrast to more advanced countries where success in business is linked more to technological and organisational capabilities. (Guillén 2001b with Kock, p. 77)

As further observed by Guillén, the importance of contact capabilities in the initial formation of business groups in the late industrialisation period, and its notable decline thereafter, has been well noted by a number of scholars in the 1990s:

> In particular, we suggest that the importance of contact capabilities, after reaching a peak early on in the economic history of a late-developing country, declines over time. After some locals create firms based on contacts, entrepreneurial survival and growth in the country shift to effectiveness and efficiency at executing projects and running plants (Amsden and Hikino, 1994), as well as to finding ways to cope with inefficient local factor markets (Khanna and Palepu, 1997; Ghemawat and Khanna, 1998). (Guillén 2001b with Kock, p. 95)

Building on the contact capabilities hypothesis advanced by Amsden (1989) and Guillén (2001a, 2001b with Kock), I formulate a historical hypothesis of nonmarket strategy which in turn yields two testable hypotheses.

Hypothesis 1. Political networking (nonmarket strategy) rises among entrepreneurs during late development but declines thereafter.

Hypothesis 1a. Political networking in frequency rises among entrepreneurs during late development but declines thereafter.

Hypothesis 1b. Political networking as nonmarket strategy affects the related firm values.

To do so, I employ an unconventional source of evidence: a database of marriages among chaebol families. The content analysis of their intergenerational family network with politicians demonstrates the epochal nature in entrepreneurial-political networks specific to the state-led industrialisation period (1961-1988); and the event study analysis of this informal network suggests further its economic and sustained significance in the post-industrialised era. The results together invite that the regime change to democracy was an important deterrence for disengaging corporate families from the nonetheless profitable nonmarket strategy since.

This article is structured as follows. Section 1 discusses the intermarriage dataset as the proxy for nonmarket strategy (contact capabilities), and goes on to discuss the main findings from the content analysis of the evolution of these human networks vis-à-vis the political economy of South Korea. As opposed to focusing on density of the network, attention is here given to the economic value of political networking through marriage. In Section 2, I seek to

draw economic implications from the value of the network marriages through investors' perceptions of the financial market.

1. NETWORK: TESTING HYPOTHEIS 1A

Marriage dataset has both strengths and weaknesses in terms of achieving this goal. Notable advantages of considering marriage as a proxy for contact capabilities are: (1) marriage is a credible network in which the partners commit to one another through the birth of offspring while sharing family fortunes; (2) marriage provides a reliable historical record by which one can investigate the associated human network; (3) both the frequency and the enduring nature of marriage permit the consistent interpretation of the proxy per corporate family with a view to better understanding its dynamism over half a century.

Literature shows that marriage added strategic value for the unit of a family. Greif (1998) argues that inter-clan marriages served as a commitment device for stabilising politics. This strategic value was theoretically demonstrated in his historic case-study of medieval Genoa. It was found that, in a family firms line of research, marriage may serve as a reliable record for understanding the non-negligible human networks in corporate families, to the extent that a network marriage has direct implications for the in-laws to participate in the inheritance of family ownership and the control of the firms over time. In this respect, several contemporary heirs in the top Korean chaebols are biological descendants of political in-laws.

Such forms of network marriage into family firms also took place in Japan during its late industrialisation period, earlier in the 20th century. In these instances, the Japanese zaibatsu families under the Japanese empire formed dense human networks with the political elite. Nakamura (1978 in Sasada 2013) documents that the economic rise of the pre-war zaibatsu directly related to their formidable political influence. Specifically, there existed a commonly

used term, 'seisho,' to describe the zaibatsu families who developed strong political ties, in the manner of crony capitalism.[1]

However, significant limitations should also be noted. Namely, contact capabilities are certainly not limited to network marriages. As well, there are other ahistorical reasons for elite marriages other than those associated with the onset of industrialisation (Greenwood 2014). Many studies have taken the view that marriages – or social network activities more broadly (including contact capabilities) – are largely irrelevant to the entrepreneurial (economic growth) activities of these corporate families in the late industrialisation period. In this pervasive research environment, it is therefore necessary to establish Hypothesis 1b in order to assess on a more fundamentally level the relevance of contact capabilities to economic growth activities.

Dataset

With the multigenerational presence of the family-controlled business groups, chaebol, the Korean economy provides an ideal setting to collect the intergenerational marriage dataset on the same corporate families that have maintained economic salience. As such, Khanna and Yafeh (JEL 2007) call for a family firm line of research on chaebol, emphasising the relevance of the controlling families to the family-controlled business group dynamics.

The collection of intermarriage (or here termed 'network marriage') dataset owes much to cumulative efforts since 1989. Kong (1989) investigated 207 marital networks since the mid 1950s, finding that about 33% of sons and 26% of daughters in her samples did marry family members of politicians. Kong's did not identify the genealogical trees of each family and thus reveals little about both the completeness of the marital portfolio in each family or about the

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[1] Whether such tie is accepted in the political economy or gets ousted as crony capitalism seems very much related to economic performance and its income distribution. The pre-war Japan in the 1920s started experiencing some collapse of the *zaibatsu* comparable to that of the Swedish Krueger in the aftermath of the Great Kanto Earthquake of 1923, which was then followed by the trade impacts from the Great Depression of 1929 (Morck 2005).

size of the family members. The Seoul Kyong-Je Daily (1991), a business press, filled this gap by conducting a census on the marital events in each chaebol family, based on family trees. As a journalistic series for two years, the press reported who married whom within the 52 chaebol families. A decade and a half later, the People's Solidarity for Participatory Democracy (a watchdog of economic activities) revamped its research on the same chaebol families (Kim et al. 2005). Then, Han (2008) offered a rigorous network analysis that pieced together what was a disjointed dataset on 52 families into one coherent network.[2]

Decomposition

Using the 643 marital events directly involving the 52 chaebol families (updated as of 2015), my study classifies the types of marriage by the vocational backgrounds of the families-in-law. These include: 1) politician; 2) corporate owner; or 3) others (no network). In a country known for state-led capitalism, the in-law share by politicians is of interest. The in-law share of corporate owners is used to contrast the share of politicians with the alternative type of network marriage over time. This classification mirrors the approach of Han (2008), who likewise incorporates a parsimonious approach to job classifications, to the extent that the corporate owners and politicians defined in the figure refer to stricter subsets in their categories. In Han's work, this is set out as follows.

"Politicians" – the key counterpart to identify contact capabilities within different types of elite in-laws – refers to high profile public servants whose children wed into chaebol families, thus qualifying them to appear in the historical network. Han (2008) classed politicians into eight sub-categories. The first six categories are 1) presidents, 2) members of national assembly, 3) ministers/vice-ministers, 4) city mayors and governors, 5) top leaders in

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[2] Han (2008) also added 6 more families, which made the top 30 business groups after the initial observation of 1991, expanding the samples of marital events from 832 to 1002 families. The addition includes network marriage datasets that did not involve *chaebol* families directly but only their families-in-law. This seems to stem from their application of snowball sampling techniques.

central authorities (such as national tax services, national intelligence, development bank or the national board of audit and inspection), and 6) top public servants in the central government (such as ambassadors). The other two categories are 7) members of provincial assemblies and 8) lower-tiered public servants. For a parsimonious identification of network marriages, the last two categories (7 and 8) are treated as ordinary in this study.

"Corporate owners" refer to the in-laws associated to both the 52 historic chaebol families, as identified by the related Korean literature since 1991, and other non-chaebol corporate owners that formed in-law relations with chaebol families, or their in-laws. Han (2008) adds 6 new chaebol families that rose to prominence in the 2000s. To provide an evolutionary account of the original chaebol families, the new chaebols in his dataset are treated as non-chaebol corporate owners in my dataset, and they only appear in the chaebol network if they formed in-law relations with chaebol families. In this respect, a marital partner is classified as a corporate owner only if the parent of in-law owned a corporation.

Chaebol families too are a subset of corporate owners. To take a parsimonious definition, with respect to corporate ownership, the set excludes top executives or financiers. It excludes cases in which the marital partner made oneself a CEO, and also excludes entrepreneurs who were introduced as a CEO but did not have a verifiable corporate name in public records. Some notable entrepreneurs were known loan sharks with substantial wealth at the time. However, without the verifiability of corporate names, they are all excluded from the category of corporate owners.

On the other hand, if parents of a marital partner owned a non-manufacturing corporation, such as a newspaper company, the in-law counts as a corporate owner to the extent that the family owns a company. While individual talents and character attributes must have also been critical in the formation of network marriage, this section takes an approach to capture what is identifiable: the family background.

Visualisation

The real dynamism of human networks evolves in complex structures. An in-depth network analysis can be modeled to trace both direct and indirect relationships (i.e. 'links') on the overall network structure, based on centrality measures (Freeman et al. 1979). The network analysis in social science has progressively gained traction since the seminal work of Granovetter (1985), which provided a deeper understanding of complex networks within social phenomena.

In this particular study, a unit of analysis is a given family's marriage to another family. Here, the node represents a family and an edge refers to a marital event. Given that a family over generations tends to experience a few marital events, a node often creates multiple edges to other nodes. An insight one can draw from a network analysis is that the position of a node in the network reflects its importance. This relative importance in the network structure is systematically calculated by a variety of quantitative measures, called centrality measures.

The visualisation here differs from the conventional use of social network analysis on the terminal shape of the network. Instead, here, I aim to provide a more substantive understanding of the evolutionary account of a historic human network. By adding the dimension of time to the network analysis, I seek to identify prime nodes over time and highlight the granular details in the evolutionary account of the network, which chaebol families and politicians formed since the postwar Republic of Korea. In order to illustrate this, each discussion is accompanied by a graphic.

----- Insert Figure 1 about here -----

Figure 1 presents a major component of the historical network, as formed through marriages (links or edges in social network analysis) between families of corporate owners (red dots) and politicians (blue dots), since the modern foundation of the Republic of Korea until

the present. The visualisation uses Yifan-Hu properties, a graph drawing algorithm that models the network as a physical system of bodies with forces acting between them (Hu 2005). While the snow-sampling technique is applied to each historic chaebol family, these corporate families have formed network relationships with each other through direct in-law relations or through other shared in-laws. All edges (links that represent marital events graphically) are weighted equally on the premise that each instance of a network marriage, rather than the relative proportion, matters as a potential resource specific to the family businesses. Most chaebol families exhibit higher centrality measures, and 43 out of the 52 historic chaebol families are located at the core (i.e. inside the black circle) through network marriage.

To explain what these graphs illustrate, each dot (node) represents a family and each line (edge or link) represents a marital event. The figure shows network marriages of each family. Ordinary in-laws, classified as ordinary or non-resourceful types in this study, are omitted from the visualisation. Network types that represent neither corporate owners nor politicians but, rather, other networks (such as legal professionals or financiers) are noted in grey. To clarify, the historic Korean chaebol families are a subset of a broader set of corporate families, which families are represented as red dots in this figure, alongside other corporate families.

The importance of these historic chaebol families (located at the core position within this social network) obtains regardless of the choice of centrality measures. Between two of the more common choices -- eigenvector and betweenness centralities -- of centrality measures, however, I find the eigenvector centralities conceptually more relevant. On one hand, the betweenness centrality gives a higher measure to a dot (a family) that allows for shorter paths between dots (families). This is useful if the purpose of the network is to travel or communicate through the network.

However, the anecdotal account and the existence of other formal channels within the corporate community suggest that this network does not appear to serve the purpose of the concerted action as a whole network. On the other hand, eigenvector centrality is proportional to centrality values of the nodes that a dot (node) is connected to. This property is suitable to reflect the micro-economic choices of each family to network with resourceful families in the market economy and thus to represent the outcome of their individual network efforts for the merit of marriage dataset.

This figure is ahistorical to the extent that it treats all available dataset on network marriages from the past the same. It confirms earlier findings in the literature (Han 2008) that the two elite groups form a grand network structure through elite marriage. In other words, the graph illustrates that the marriage network emerged as a large-scale phenomenon that went beyond the 52 historic chaebol clans in South Korea. The actual network is more extensive, given that I intentionally limit the visual analysis to direct links, and secondly direct links (connected by two direct links to the loop). What would be a historically consistent explanation for the existence of this network? Generally speaking, some Korean sociologists see the marriage network the result of collusion among corporate owners, as a means to influence the state (Kim et al. 2005).

To afford a better understanding of the network characteristic, focus needs to be given to the core (circled black in Figure 1), where the characteristic of the network are more clearly visible due to the higher centrality measures.

----- Insert Figure 2 about here -----

For the purpose of this article, Figure 2 visualises the constituents at the core from Figure 2. In order to separate the core from the network, Figure 2 includes corporate owners, politicians, legal professions, and financiers, whilst omitting links to other network types. Similar to Figure 1, these are cumulative networks since the foundation of the Republic of Korea, dating back to

the state-led industrialisation period. In this figure, 1 to 23 represent the 23 surviving chaebol families, whose details are noted (in the source). X represents the 29 bankrupt chaebol families, whose groups went bankrupt in the aftermath of the Asian financial crisis between 1997 and 2015. S represents politicians. Although not tangent to the interpretation of the figure, grey dots represent corporate owners (other than the historic chaebol families), financiers, and landowners, and L represents families of legal professionals, including: ex-ministers of justice, judges, prosecutors and law firm partners. Otherwise, ordinary in-laws are excluded from the figure. Most of the historic chaebol families appear in the core on the grounds that 1) snow-sampling techniques (which drew new samples from acquaintances of existing samples) were applied around their marital events, and 2) they formed network marriages amongst them. Nine chaebol families do not make the core and are presented as satellites.

So far, the focus on this marriage network dataset in the Korean literature went to the statistical properties of the network and did not find novel implication. In a departure from this approach, I focus on how the network came to be and evolved over time. In particular, it considers:

- Which families (nodes) first formed coalitions in the network?
- Who rose to become prime nodes in each decade?
- At which point did the network evolve to take its current structure?

Adding a time dimension to network analysis not only helps to raise fundamental questions concerning the dynamic properties of the given network, but also offers systematic answers to some of these questions above.

Although conceptually promising, this approach faces certain challenges. The first is how to assign a consistent identification to a marriage of a descendant who shares a bloodline with two incumbent families in the network (i.e. with two nodes). For example, the next heir of Samsung (Lee, Jae-yong) is a grandchild of the founder of Samsung (Lee, Byong-chul), but

also of a well-known politician (Hong, Jin-ki). In order to visualise evolutionary networks over time, a means is needed by which to trace family descendants through a single family lineage.

Given that this study aims to understand the path of corporate families, and chaebol families in particular, I construct an analytically structured history by taking a perspective. The process of assigning family identity to descendants is based on assessing the descendants' ties to chaebol families. Therefore, this network traces the blood ties of the founders of the 52 historical chaebols, and not of the politicians or non-chaebol corporate owners. This is even in the cases where the bride or bridegroom might have had a politician, or a non-chaebol founder, as another grandparent. In short, all bloodlines of chaebol founders define the descendants of any respective chaebol families.

For all other families, the parental background defines the identification of the family background for the bride or the bridegroom. Such a procedural distinction also reflects the fact that corporate families - especially the surviving chaebol families - have maintained their de jure identity as controlling families of business interests over generations. This contrasts with politicians who tended to retire without being able to pass on their professional entitlements or positions.

----- Insert Figure 3 about here -----

Figure 3 visualises the evolution of the core network (Figure 2), by applying network analyses to historical constituents by decade. This is a novel approach that contrasts with the conventional use of a network analysis. The first key observation is that politicians (demarcated by 'S') have filled the core of the chaebols' corporate network. The frequency of politicians increased noticeably in a snapshot of 1970, when compared with that taken of 1960. This suggests that there are more frequent inflows in the 1960s. In a snapshot of the core in 1980, politicians clearly outnumber chaebol families in terms of head count. Additional dynamics of politicians are not noticeable in either 1990 or 2000, visually

confirming that the 1960s and the 1970s were crucial decades to their emergence as in-laws. This inflow ceased in the 1990s, suggesting that while active politicians were gone, their descendants had remained as heirs of these business groups.[3] In this respect, the presence of politicians in Figure 2 as of 2015 only highlights their prevalence during the early decades.

The second observation is that the top chaebol families formed the core of the marriage networks early on in the observational period. A historical approach to network analysis helps confirm that the network marriage among corporate owners predates their network marriages with politicians. The snapshot of 1960 shows that the top chaebols started forming network marriages, before the start of state-led industrialisation. Nine politicians did appear as in-laws at that time, but they were different from later politicians. Some of them were ex-bureaucrats under Japanese colonisation and became in-laws of pre-chaebols in the postcolonial 1940s (as observed from the snapshot of 1950). Others in the snapshot of 1960 were civil politicians rather than military (before General Park seized power through his military coup d'état in 1961). It is clear that the marriage network experienced its large inflow of politicians from the 1960s to the 1980s, after the initial network was established by the inter-marriage between chaebol families.

The indicator highlights a dramatic change in frequency of network marriages, between corporate owners and high-profile politicians, from before the late 1980's and after. This threshold, so to speak, is characterised on one side by the state-led industrialisation initiatives under the dictatorial regimes and, on the other, by the economic liberalisation policies installed by subsequent democratically elected governments from the 1990s onwards. The content analysis is in order to offer a simpler, collective illustration of the salient change in the chaebol-politicians networks, with respect to the contact capabilities (nonmarket strategy) hypothesis for entrepreneurs since the late industrialisation period.

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[3] Brides or bridegrooms to *chaebol* families do not tend to retain many corporate shares, but their children do.

Content Analysis

To clarify the historical periodisation for the interpretation of the dynamism in Figure 1a, the First Republic of Korea was founded on August 15 1948, three years after the end of Japanese colonisation.4 The period of state-led industrialisation coincides with the unelected military regimes (from 1961 to 1988). Given that President Roe, Tae-Woo (1988-1993) was elected, though also an ex-military general, one may assume that the political change took place over an interim period (1988 to 1993). During this period, South Korea's industrial policy operations began to decline (Chang et al. 1998).

In this research, 1988 has been identified as the breaking point for two reasons. Firstly, the catalyst for democratic change in the country was the 'June Democracy Movement' of 1987, where the public successfully resisted an attempt by the military government to appoint its protégé as the next president, without a national election. A second important factor was the stark policy change in corporate governance that was initiated by the Chun government in 1987. These initiatives sought to regulate the chaebols to, what was then, an unprecedented level. Based on these classifications, and this historical periodisation, Figure 4a illustrates the network marriage portfolio of chaebol families since the modern foundation of the Republic of Korea.5 This Figure is based on all 643 marital events from 52 families, including the bankrupt chaebol families.

----- Insert Figure 4a about here -----

To consider whether the survivorship alters this narrative, Figure 4b is based on its subset: 433 marital events of the 23 surviving families only. The survivorship does not change the notable

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4 I acknowledge -- as the origin of the Republic of Korea -- the political legitimacy of the Provisional Government of the Republic of Korea, 1919-1948, in the Chinese cities of Shanghai and Chongqing during the Japanese colonization. My analytic focus on the postwar period revolves around the state-led industrialisation period in South Korea, as well as the data availability.

5 Amsden (1989) also takes the year of General Park's military coup, 1961, as a pivotal moment that initiated the late industrialisation of South Korea. In Amsden's periodisation, the military control was crucial to getting the property rights "wrong" for the growth breakout, which enforced top-down economic policies through the five-year plans.

divergence between politicians and corporate owners, around the early 1990s. The top-down change in political economy is noted by scholars at the theoretical level:

----- Insert Figure 4b about here -----

In the marriage network, the importance of politicians for in-laws appears to decline as a result of the new regime's move towards democratic and liberalised policies that typified the post-industrialised era. In place of political alliances through marriage, corporate families become more prominent.[6] In this light, the effects of regime change on network marriage bring into question the long-held view within the literature of the chaebol that network marriage remained the primary way in which the chaebol families exerted political control. Rather, this finding supports the top-down perspective regarding the transformation of the political economy, away from the coordination between the chaebols and state-led initiatives (Chang et al. 1998). Indeed, in order to preserve their prominence within the new post-industrialised order, the chaebols were seen to embrace new types of human networks.

Whilst intriguing, this novel interpretation needs to be tested for its statistical significance.[7] Table 1 illustrates the results of chi-square tests on the proportion of politicians to corporate owners in the network marriage dataset, before and after the introduction of democracy.[8] The null hypothesis is that there is no significant difference. The null is rejected at the .01 level of confidence, suggesting a meaningful difference in the pattern of network marriages before and after the regime change of the 1990s.

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[6] The network marriage dataset only identifies the backgrounds of families not of individuals. A young entrepreneur who set up a firm in Silicon Valley after his MBA in Stanford, for example, was categorised as a corporate owner not because the bridegroom owned a start-up company of his own but because his father already owned a known corporation in South Korea. While the family background may not capture a meritocratic quality of the newly wed, I take this approach to both verify and add consistency to documentation of family backgrounds.

[7] See Bates (1998) for a similar test.

[8] The timing of separation from dictatorship to democracy for Table 2.3 is 1988. The same test from 1993 does not alter the salience of this result, while it does for 1998. For this testing separates marital samples simply before and after 1988, a margin of error in the interpolation of marital years is expected to reduce substantially.

The result is the same regardless of whether the test involves all 52 chaebol families, or only the 23 surviving families. Facing the changes in the political economy, from a dictatorship to a democracy, together with its implications for South Korea's economic policies, chaebol families do appear to have rebalanced their network marriage portfolios away from politicians.

Amsden (1989) identified the political economy of South Korea with two dominant players, the state and the chaebol. In her view, these two powers coordinated closely with each other toward the growth breakout during the industrial period. This suggests that politicians and chaebol families had maintained substantive relations, which paralleled the chaebols exerting influence on new policies and licensing. Due to their many aligned interests, it was only natural for the two elite groups to maintain strong ties during this earlier period.

With the historic change in the political framework, from a dictatorship to a democracy, these incentives, norms, and business prospects were bound to change. This did not only include political change, but also a fundamental transformation in the relationship between the two dominant players. By 1988, the subsidised capital was called back by the state.[9] The controlling families were pressed to issue equities to repay their cheap capital and experienced policy-driven ownership dispersion.[10] The government of Kim, Young-Sam – a former pro-democratic advocate and the elected non-military president for 1993-1998 – pushed for financial liberalisation and the adoption of global standards.[11] The Economic Planning Board, the hub for industrial policies and subsidised capital, shut down permanently by 1993.[12]

Reflecting the tectonic shift in the political economy, the stark change in the pattern of their networks (from the significant number of marriages noted between the dominant players

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[9] See an article about 'the retrieval in time of surplus' on The Maeil Daily (p2), 1988.02.06. at http://newslibrary.naver.com (accessed on 2015.10.03).
[10] Ibid.
[11] See Chang et al. (1998) for details on the transformation account in the political economy of South Korea, based on the demise of industrial policies during Kim, Young-Sam's government while seeking uncoordinated liberalisation.
[12] Ibid.

during the industrialisation period, to the notable reduction during the post-industrial period) confirms the rise and fall of contact capabilities (Amsden 1989; Guillén 2001a, 2001b with Kock). The figure demonstrates that nonmarket strategy at the level of intermarriage unraveled substantially in the post-industrialised era.

2. EVENT STUDY: TESTING HYPOTHESIS 1B

The network hypothesis of marriage implies that investors may respond to network marriages, whilst ordinary marriages of the controlling families should not affect firm values. A standard event study is used in this section to analyse whether the stock market responds to the marital events of the controlling families, by translating investors' appreciation, or non-appreciation, of network marriages into stock value. The idea is simply to identify abnormal returns at the moment of network marriages and to test their significance. In this respect, Figure 5 illustrates a graphical result of an event study analysis.

Along the line of earlier analyses, this figure classifies the marriages of chaebol families into network and ordinary marriages. It is based on 80 marital events that involve 106 listed firms. These family firms are related to either 79 network or 27 ordinary marriages between 1983 and 2015.[13] To clarify, there are more firms than marital events to because some marital events between two corporate families (corporate marriage) involve two firms.

Over the event window of 21 trading days (-10, +10), it records that network marriages led to an increase in the cumulative abnormal return (CAR) by 5.70%. This is significantly positive, differing from the null hypothesis of zero, with the t-statistic of 3.13. For ordinary marriages, the CAR marks near zero, -0.16%. Both the significance of network marriages and the insignificance of ordinary marriages are consistent with the network hypothesis.

----- Insert Figure 5 about here -----

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[13] Most of these firms, 92, are related to the core *chaebol* families from the first section and the rest, 14, are of corporate families that became in-laws for *chaebol* families.

As the full result table will show in section 6, the test statistic supports the hypothesis at a significance level of 1% for shorter event windows, and 5% for longer event windows. As such, the impact of a significant event tends to be clearer with shorter event windows in the standard event study. For presentation purposes, an event window of 21 trading days is used. The next two sub-sections present the empirical process by which the CAR figures are arrived at, from a review of the dataset collection to the calculation of the event study analysis.

Data with Dates

The financial dataset relates to the 52 chaebol families, and compiles the types and dates of their marriages, as well as daily stock prices of their family firms around the timing of marriages. The challenge has to do with the marriage dataset. The documentation of network marriage was based on 643 marital records that involved these families. A novel approach for the visualisation of the historical network was that the process allowed for interpolating the years of their marriages, based on other family-specific information. That allowed for the inclusion of all marital records, even for those omitting the specific wedding year.

For an event studies analysis, however, the precise dates of marriage are required, in order to match them with the daily stock returns for the related, listed family firms. Not all of it can be used here, for only a few of them included the exact wedding dates. Subject to the screening process, laid out in the qualifications below, 80 marital events meet the sample qualifications and can thus be included in the analysis.[14]

Qualification 1: A marriage took place after the 5th of January 1981 from which the KOSPI (Korea Composite Stock Price Index), as well as daily return series for individual stocks of the time, are available for analysis. Only 291 events of 643 marriages meet this

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[14] This procedure to investigate dates reveals that the top-down approach of assigning year of marriage in the first section had a margin of error of 1 or 2 years in only 3 cases out of these 80 verifiable cases to actual dates. The margin does not alter the evolutionary picture documented in the first section as it presented the pattern of network marriages by five-year intervals over time. None of the three cases crossed the borderlines.

criterion.[15] The index return is used for the market model, in order to compare the information on the index to the individual stock prices. This allows for the calculation of normal prices for the event window, based on their linear relationship during the prior observation period.

Qualification 2: At the timing of the marriage, the parents of either or both sides had family ownership of (or ran) subsidiary firms of business groups listed on the KOSPI in the Korea Stock Exchange. When parents were associated with multiple firms under family ownership, identifying only one firm over many subsidiaries poses difficulties. Fortunately, most news sources reported the precise titles of the parents, of brides or bridegrooms, and their particular roles within their family-controlled groups. If a parent was a chairman of an entire business group, or of a smaller spin-off group, the flagship company with the largest market cap was tracked. If a parent was not a chairman of a business group, his or her corporation was tracked.[16]

As concerns the identification of a relevant firm that was not clearly stated in the news source (or if the title of a parent referred to a leadership position in a private subsidiary in a family-controlled business group), other news sources were used to identify which listed firm was owned by the parent. This firm was then, subsequently, tracked. When the parent's ownership was not clearly identifiable at the time of marriage, the current information on the parent's share of ownership was used to infer the most likely firm listed. The current ownership information was drawn from the database of Korea's Financial Supervisory Service and Korea's Fair Trade Commission (as of 2015).[17]

Qualification 3: Each and every marital event used in this section had official news coverage at the time of the marriage, as verified by newspaper archives. Of those, 25 cases had

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[15] The stated figure accounts for 39 overlapping intermarriages between constituent families.
[16] The newspaper tended to cover those marriages of brides or bridegrooms whose parents were active as owner-managers, with substantial ownership, or an important lineage for family succession in major business groups as studied in the first section and dominantly for the surviving groups ex-post.
[17] For such cases, consistency checks were performed and the 3 unclear cases do not affect the overall and specific outcomes.

their wedding reported in the news more than a week earlier than the actual wedding.[18] Of those, 20 events are related to network marriages and 5 to ordinary cases.[19] In line with the efficient market hypothesis, the event date is here defined as the next trading day following whichever came earlier between the actual wedding date, or, the first day the wedding was publicised. In other words, if the wedding news were pertinent, the stock market would respond to the initial news coverage of the wedding, and would not wait for the date of the wedding itself. As a working hypothesis for research purposes, this statement is not assumed, but rather tested at the outset of the analysis.

Table 2 shows that, in the instances where announcements predated the actual wedding, the Korean stock market responded significantly to network marriages only on the announced date of the wedding (1a), and not on the actual date (2a). This result is consistent with the working hypothesis that the market would, if at all, respond to the initial timing of the news. Also, the market did not respond to ordinary marriages for either date, (1b) or (2b). This is consistent with the network hypothesis of marriage that the market would respond only to network marriages. Determining which event counts as either an ordinary or network marriage for chaebol families follows the previous classification in section 2, which is in turn based on the classification established by Han (2008).

----- Insert Table 2 about here -----

Together, these qualifications leave exactly 80 martial events involving the controlling families for 106 listed firm. In response to the anticipated question of how 106 firms (samples) relate to 80 marital events, members of 106 families holding family shares in firms listed in the stock market participated in the 80 relevant marital events. Each event involved at least one chaebol family, with the other marital partner having either a corporate or political role.

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[18] The wedding news reported earlier than actual weddings were known either as individual wedding announcements or as press releases by the investor relation team in business groups.
[19] Because abnormal returns in the event window are compared with normal returns in the estimation period, a small number of events in the category (for example 5 sample events for ordinary marriages) can still have statistical implications.

Of the 80 events, 27 are classified as ordinary marriages, 11 as political marriages, and 42 as corporate marriages. Thus, there are 11 political marriages and 68 corporate marriages that satisfy the qualifications, together totaling 79 network marriages. 38 marital events (11 for political marriages plus 27 ordinary marriages) provide the financial dataset for chaebol-affiliated firms. The other 42 marital events are characterised as corporate marriages involving two corporate families. When a network marriage involves two corporate families, the event can (but not always) yield two samples per event, namely, one stock price movement for each firm. Had both participating families of the 42 corporate marriages controlled listed firms, the 42 events would have yielded 84 samples. In this dataset, however, 26 events involve two listed firms from each side, whereas 16 events involve controlling families of one listed firm but another private firm. Thus, the 42 events yielded a total of 68 available firm samples, in three different types of corporate marriages.

----- Insert Table 3 about here -----

Table 3 shows the sample size and composition of the event study analysis. Of the 68 corporate marriages, 54 samples reflect the stock price movements for chaebol affiliated firms (26 samples with ex in-law and 28 samples with another chaebol in-law). Furthermore, 14 samples reflect stock price movements for the related nouveaux firms. Please note that the use here of the terms 'nouveaux in-law', 'nouveaux family' and 'nouveaux firm' is consistent with Bunkanwanicha, Fan, and Wiwattanakantang's (2013) use of the term 'nouveaux riches'. In this section, it identifies marriage partners, families and firms that had previously not been designated as, or related to, the chaebols.

In the case of a corporate marriage, between a chaebol family and a nouveaux family, I draw economic relevance from the network. In particular, one sample is taken from the chaebol-

affiliated firm and the other for the nouveaux-affiliated firm.[20] As 12 of the 26 nouveaux families had not publicly listed their firms at the time of marriage, only 14 nouveaux firms present information on stock price movements. To remain consistent in identifying nouveaux families as in-laws, only nouveaux families with precise corporate names count as corporate in-laws. As a result, all in-laws who are described as law-firm partners, bankers, CEOs and entrepreneurs in the source material, but do not have corporate names, are here classified in the 'ordinary' category.

Procedure

The standard procedure of event studies from Campbell et al. (1997) is here followed. What's more, the presentation of results is as comparable as possible to those of the Thailand case-study of Bunkanwanicha et al. The procedure entails, firstly, identifying whether there exist abnormal returns from network marriages and, secondly, testing the statistical significance of those returns. An abnormal return is characterised as the difference between an actual return and a normal return for a listed firm, for each date in the event window. Bunkanwanicha et al. use the market model to input the normal return on the event date, from an estimated period prior to the event date.

The market model is analogous to a restricted case of the Capital Asset Pricing Model with a risk-free rate of zero. It hypothesises a linear relationship between the market index and individual stocks. For this section, this requires running 106 regressions for each market model. Based on the estimates of the constant and slope of the simple regression for each security, this approach tallies the normal returns from the daily index returns during the event dates. The mean-adjusted model does not require this assumption for normal returns but, rather, takes the

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[20] The majority of 106 firms, 92 family names, are related to one of 52 *chaebol* families. The majority of the *chaebol*-related firms, 86 out of 92 names, are controlled by one of 23 surviving families and only 6 names are related to the bankrupt family groups ex-post. While there are 22 nouveaux owners in the 80 martial events, only 14 families have firms listed in the stock market to enter the dataset of the 106 firms.

average returns of the estimation as the basis of a normal return in the event window. To ensure consistency, I employ both models and report their results in section 6. To clarify, one can conduct an event study with few events, because an individual event draws its own statistical significance, based on the daily prices during the estimated period. In this instance, 60 days and 225 days are tracked prior to the event window period. A multiple sample of events additionally helps to reduce the standard error, allowing for a more precise measurement.

The daily return is calculated based on daily stock returns for the related firms, in accordance with the second qualification in sub-section 5.1. Prices are adjusted for dividends, stock splits and distribution, as are daily returns. The observation for abnormal return takes place on and around the event date (t=0). This is defined by the third qualification in sub-section 5.1 as the next trading day following the earlier date of either the actual wedding day or the day the wedding was publicised. The abnormal returns around the event date are calculated as the CAR, in order to note that it is the sum of daily abnormal returns around the event date. The CAR within the event window is calculated by the sum of the differences between the daily abnormal, and normal returns, during the window. The normal returns are forecast from the estimated period, prior to the event window. The number of observed dates for the CAR is the event window. Brown and Warner (1985), and Bunkanwanicha et al., use 5 trading days before the event date to 5 trading days after (-5, +5) as the basis for the event window. The length of the event window affects the likelihood of type I and type II errors occurring.

Findings and Consistency

Table 4 illustrates the main findings. The dependent variable is the cumulative abnormal returns, and the explanatory variable is the marital event of chaebol families. The statistical significance of an abnormal return is evaluated per day and per event.

----- Insert Table 4 about here -----

The CAR on a type of events equates to abnormal returns across the event window days and across firms in the same type. To make inferences across different types, these marital events are classified into network and ordinary marriages first, and then into corporate, political, and ordinary marriages. To ensure consistency with the network hypothesis of marriage, the results of ordinary marriages are compared with network marriages. For consistency checks, four event windows are analysed in columns 1 to 4 on three different model specifications from models A to C. Model A is the market model whose parameters are estimated over 60 trading days. Model B is the mean-adjusted model and, for the estimation period, uses the average returns over 60 trading days as the normal return. Model C is a further market model based on 225 trading days. The first set of results (set 1) studies the network hypothesis of marriage at the level of network marriage vs. ordinary marriage. For illustrative purposes, Figure 5 sets out the results of the mean-adjusted model B over the event window of (-10, +10).

----- Insert Figure 5 about here -----

For all three different model specifications from A to C, the CAR for network marriage is positive and statistically significant over all event windows, including: (-3, +3), (-5, +5), (-10, +10), and (-15, +15). The significance of cumulative abnormal returns naturally declines in the longer event window (-15, +15). Consistent with the network hypothesis, ordinary marriages remain insignificant in all model specifications over all event windows.

----- Insert Figure 6 about here -----

The second set of results (set 2) separates network marriages into two types: corporate and political. In line with (set 1), Figure 6 presents the results by the mean-adjusted model B over the event window of (-10, +10). For both model specifications, A and B, the respective CAR for either type of network marriage is positive and statistically significant. The results of

model B are especially sensitive to abnormal returns. They, furthermore, register the significant CAR from both types of network, throughout all event windows.

In determining which model to base the presentation on, special attention is paid to how each model represents ordinary marriage. In model A, it creates the impression that the market 'penalises' ordinary marriages with its apparently negative CAR, -1.7% over (-10, +10). This, however, is not actually the case due to its low t-statistic of -0.97%. With model B, the CAR for ordinary marriage stays near 0 at -0.16% over (-10, +10), graphically more consistent with its statistical implication. Therefore, while I report both results in the table, I present Figure 2.6 in model B.

Figure 6 shows the split trajectories of the CAR for each type of network, where there seems to be no discernible pattern of difference between two networks. This graphic result needs to be compared with (set 2) in Table 4, where the CAR from politicians appears to dominate that of corporate owners over the event windows of (-10, +10) and of (-15, +15). This apparent dominance of politicians in the table is driven by an outlier, which is excluded in the figure. While the significance of the CAR is sensitive to the inclusion or exclusion of the outlier, due largely to the small sample of politicians, the separation helps to observe the driver of the CAR of network marriages. The statistically positive CAR on political marriage is consistent with the results of Thailand's family firms in Bunkanwanicha, Fan, and Wiwattanakantang (2013).

The third set of results (set 3) shows the decomposition of corporate marriages. For illustrative purposes, Figure 7 presents the result by the mean-adjusted model B over the event window of (-10, +10). As in section 5, corporate families are classified as either chaebol or nouveaux, based on the chaebol affiliation of its family firm. In other words, nouveaux firms are small family firms in relation to Korean chaebols. I trace stock price movements for three different types of information: 1) the return experience of a nouveaux firm when its controlling

family networked with (i.e. became an in-law of) a chaebol family; 2) the return experience of a chaebol firm when its controlling family networked with a nouveaux family; and 3) the return experience of a chaebol firm when its controlling family networked with yet another chaebol family.

----- Insert Figure 7 about here -----

Because the study is about the network marriage of chaebol families, I do not follow the return experience of nouveaux families networking with nouveaux families. However, I do follow the return experience of nouveaux firms, when their controlling families networked with Korean chaebols. In this respect, their return experience is noteworthy with regards to the three types of corporate marriages.

Bunkanwanicha et al. demonstrate that nouveaux firms may benefit most from network marriages with larger-scale firms. This is because of the likelihood that these controlling families (as nouveaux riches) would have garnered fewer business connections than the established controlling families. As such, the augmentation of network resources would make a more decisive impact on the prospects of their family firms. Alternatively, the old moneyed families would have already accumulated network resources specific to their chaebol-affiliated firms. As such, the additional value from networking with other established families may be relatively small. In this context, the marginal values of network marriages are likely to be greater for nouveaux families, or at least perceived so by investors, than for the established chaebol families.

Table 4 confirms that nouveaux firms gained the most in terms of abnormal return experiences, and this is especially evident in the shorter event windows of (-3, +3) and of (-5, +5). The CAR for nouveaux firms is identified at above 10%, at the significance level of 1%. Notably, this is twice the size of the CAR for network marriages, be it political or corporate marriage in Figure 6. This separation of corporate marriages affords a deeper understanding of

the source of abnormality in this type of network marriage: nouveaux families. The corporate marriages between two large-scale chaebol families fail to demonstrate a positive, statistically significant return in set 3 for any event window period.

Notable for nouveaux firms is not only the high level of the CAR, but also its overreaction in abnormality, seen five days after the martial event dates (as per Figure 7). The result is not driven by an outlier but persists even after accounting for outliers, thus deserving a possible explanation. From a behavioural finance perspective, Lo (2007) points to the prevalence of investors 'over-reacting' to apparently relevant information, and the subsequent market adjustment that takes place:

> A common explanation for departures from the Efficient Market Hypothesis is that investors do not always react in proper proportion to new information. For example, in some cases investors may overreact to performance, selling stocks that have experienced recent losses or buying stocks that have enjoyed recent gains. Such overreaction tends to push prices beyond their 'fair' or 'rational' market value, only to have rational investors take the other side of the trades and bring prices back in line eventually. (Lo 2007, p6)

This overreaction explanation may help account for the hump-shaped CAR. Still, more would be needed to consider why the behavioural shape of return is particularly evident in nouveaux firms but not in large firms. In this respect, Lo and McKinley (1989) provide a size effect explanation pertinent to small caps:

> However, if the size of one's long or short position is constrained, as is sometimes the case in practice, applying the contrarian strategy to small firms would be more profitable on average. Alternatively, this may imply that the behaviour of small stocks is the more anomalous from the perspective of the efficient markets hypothesis (Lo and McKinley 1989).

The investment strategy studied in Lo and McKinley (1989) is not event-driven but involves the timely rebalancing acts between stocks and bonds. This functions to limit the direct implication of abnormalities on the daily equity returns from network marriages. This insight nevertheless can guide one's thinking on why smaller caps may experience more behavioural returns than larger firms would.

Among the three networks, the one concerning chaebol families gained the least appreciation from the market. Chaebol families who married nouveaux families fared better over the event windows of (-5, +5) and (-10, +10), but not as much as nouveaux families did. Simply put, the established nature of the core chaebol families attracted the least market reaction among the three types of networks of corporate families. The higher returns for nouveaux families, as well as the lower returns for old moneyed families, are in line with the law of diminishing marginal utility.

Placebo Test

This section conducts a placebo test as a means to reinforce the argument that the results in Table 4 are not purely random. To address the potential errors, types I and II, different lengths of event windows are additionally analysed for (-3, +3), (-10, +10), and (-15, +15). The robustness necessitates an additional approach to warrant that the statistical significance was not a spurious result drawn from the coincidental calibration of the even windows or other devices. A possible approach would be to run an OLS regression, in order to control all possible, rival explanations across the samples. However, the sample size is not large enough to afford this approach, and it may still fail to account for the firm (and family fixed) effects that would affect the results. An advantage of the event studies analysis is that the research design compares the event period sample with its own samples from the estimated period. This

means that the cumulative abnormal return is already a product of experimental control (per unit of event).

----- Insert Table 5 about here -----

Before claiming the non-randomness in the statistical results, the sensitivity of the test itself is another issue that needs to be explored. Depending on the model specifications, Models (A) to (C) in Table 4 respond to the same events in varying degrees. This suggests type I errors. To overcome both issues, this part conducts a placebo test.

To incur minimum differences, daily returns for each firm are drawn from a year before, or a year after, by randomisation. The aim is to consider the potential seasonality in daily returns.[21] Taking this approach, family or firm fixed effects would be mitigated and one would not have to replace unobtainable information with crude proxies that can suppress meaningful results. Table 5 illustrates the results for the control group. The tests do not respond to the absence of marital events. Model (B) identifies little noise at the local level, but maintains no response throughout.

This exercise suggests that the evolution of network marriage was not only a matter of assortative matching since it also affected firm values from an investor perspective. The study suggests that the controlling families of the Korean chaebols may not just be large shareholders. Ultimately, they are the controlling families that affect the firm values significantly with their actions, even when they do not sit as CEOs of their subsidiaries. Given that the market reacted to a certain set of network marriages, with the significantly positive CAR, a marriage of the controlling families may indicate an outlook for corporate governance of the firm and their business groups. Alternatively, a network marriage itself may be read as useful resource specific to the firm.

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[21] Using 200+ trading days may risk a higher chance of capturing kinks due to other events over the longer estimation period. The return parameters based on 200+ trading days may be influenced more by the seasonality in daily returns given that the estimation length is close to one calendar year.

As such, the role of the controlling families may not only lie in the day-to-day management of the business groups. Rather, this role may also include that of a facilitator, who exploits his contact capabilities for the benefit of their associated business groups (Amsden 1989; Guillén 2001a, 2001b with Kock, 2010). The evolutionary account of political marriage vis-à-vis corporate marriage in this chapter shows that the frequencies of these contact capabilities declined rapidly with the end of state-led industrialisation. This empirical result supports the theoretical prediction by these authors that the chaebols altered their strategic focus to the effective and efficient management of their firms (Amsden and Hikino, 1994). It also shows how entrepreneurs filled institutional voids when prevailed in the emerging markets context of South Korea, revealing that political ties were importantly family ties as well in key family businesses. This analysis provides another angle to bridge family and political ties, as has recently been studied by Ge, Carney, and Kellermanns (2018).

The documented shift from political marriage to corporate marriage in the Korean chaebols, however, does not necessarily imply that this was in response to a falling rate of return experience of political marriages. Although the frequency of political marriages touched zero by 2015, the CAR on political marriage stayed notably high (set 2 of Table 4). In contrast to the consistent CAR on political marriage, the CAR on corporate marriage shows no meaningful effect for the Korean chaebols (once their business groups had been established). It is only the cohort of nouveaux firms that make the corporate marriage match the levels of political marriage (in Figure 6). Corporate marriages between the post-industrial chaebols fail to mark a significant CAR in the post-industrialised Korean economy. In other words, their assortative matching among corporate families, especially on the side of the chaebols, does not translate into an economic value.

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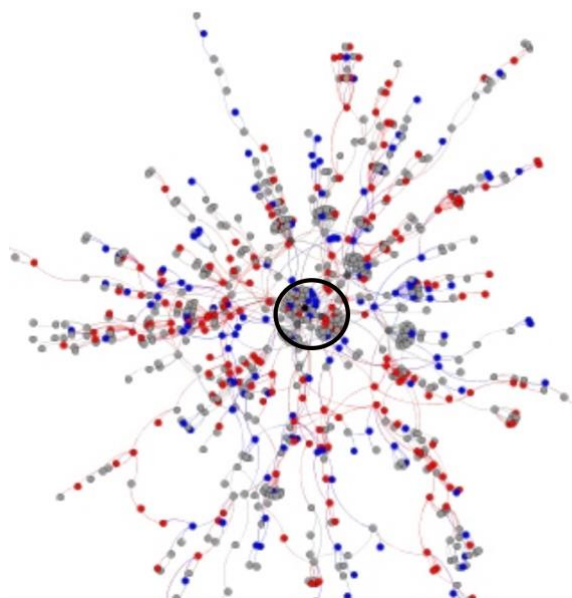
FIGURE 1. THE MAJOR NETWORKS IN THE MARRIAGE DATASET (AS OF 2015)

Notes: Own calculations based on the network marriage dataset. An interactive platform, Gephi, is used to visualise the network marriage. Blues and reds are in unit of family, representing politicians and corporate owners respectively. Families of other backgrounds are in grey. Families with higher centralities are clustered in the core (i.e. inside the black circle). For visibility, Figure 3 provides a focused visualisation on the core and details its constituents.
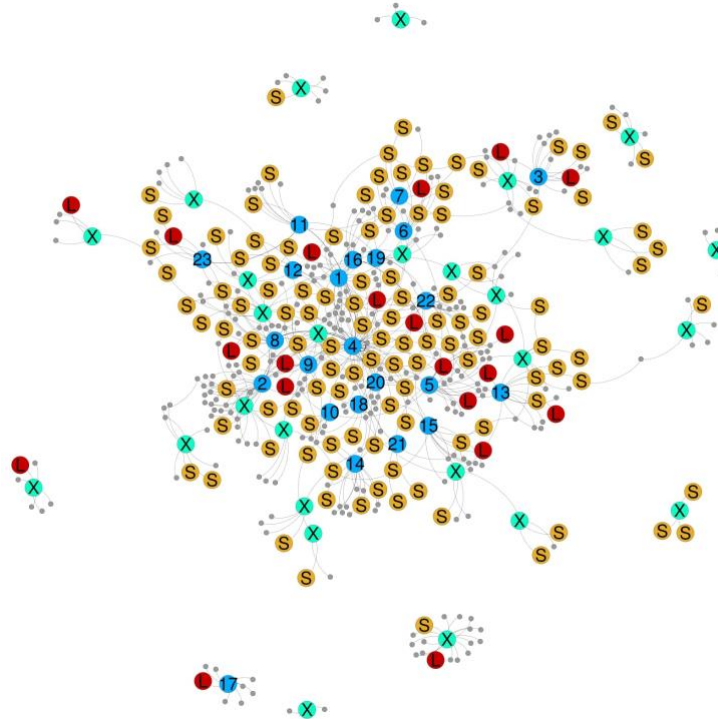

FIGURE 2. THE CORE IN THE FAMILY NETWORKS (AS OF 2015)

Notes: Own calculations based on the network marriage dataset. These are cumulative networks since the foundation of the Republic of Korea. 1 to 23 represent the 23 surviving chaebol families, including: (1) Samsung; (2) Hyundai; (3) SK; (4) LG; (5) Lotte; (6) Hanjin; (7) Hanhwa; (8) Doosan; (9) Keumho; (10) Dongbu; (11) Daelim; (12) Dongyang; (13) Hyosung; (14) Dongkuk; (15) Kolon; (16) Youngpoong; (17) Daesung; (18) Daesang; (19) Kyongbang; (20) Taekwang; (21) Amore-Pacific; (22) Samyang; (23) Samhwan. X represent the 29 bankrupt chaebol families. The threshold is whether a group survived through the Asian financial crisis of 1997 and into 2015. The network marriages by X predate their bankruptcies. Grey dots represent corporate owners, financiers, and landowners. S represents politicians. L represents families of legal professions, including: ex-ministers of justice, judges, prosecutors and law firm partners.
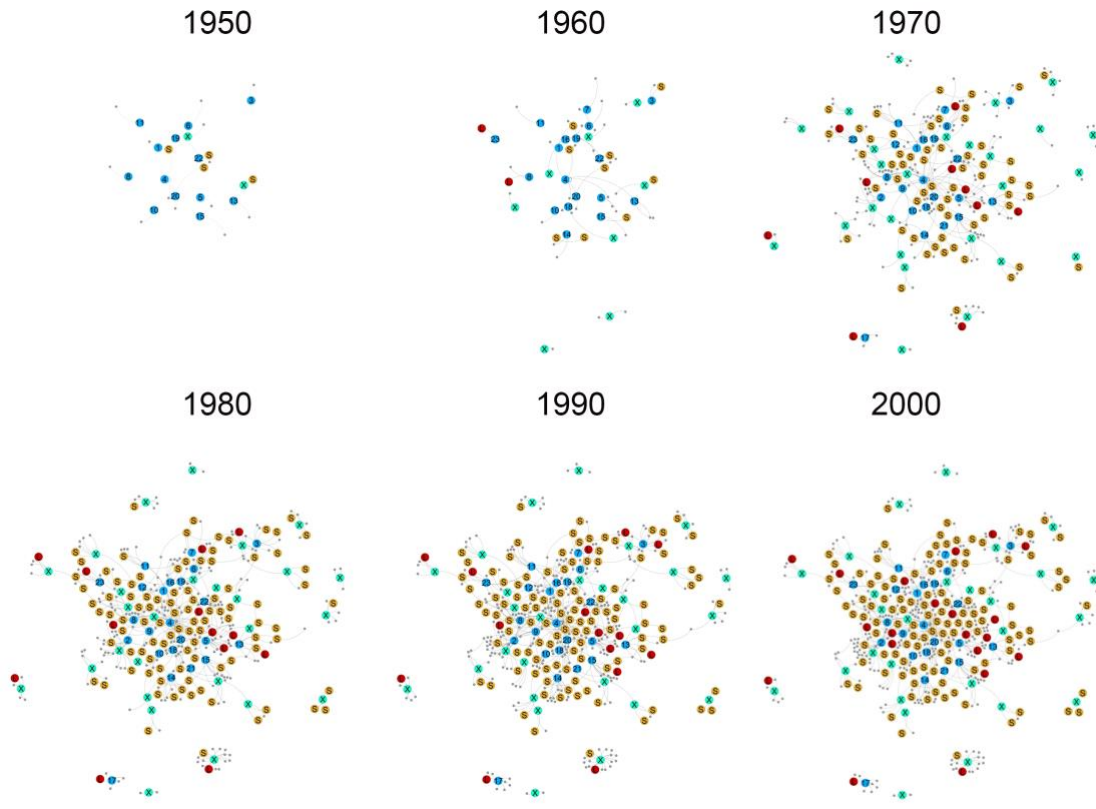
| 1950 | 1960 | 1970 |
| 1980 | 1990 | 2000 |

FIGURE 3. EVOLUTIONARY ACCOUNTS AT THE CORE (SINCE 1950)

Notes: Own calculation based on the network marriage dataset. The details are the same as those of Figure 3, for which this presentation accounts for how the current human network has evolved over time, by decade, since 1950.
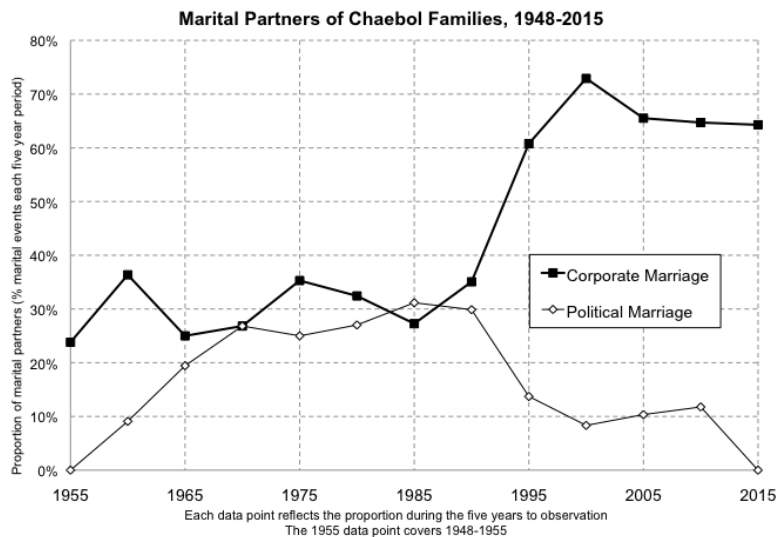
FIGURE 4A. IN-LAW PROFILES OF CHAEBOL FAMILIES (SINCE 1950)

Notes: Own calculations, based on the updated network marriage dataset. Each data point (except for 1955) represents a five-year interval. To illustrate, the 2015 data point reflects the dataset for 2011-2015. The 1955 data point reflects 1948-1955, beginning with the post-colonial First Republic of Korea, and taking into account the business inactivity during the three years of the Korean War. This historical interpretation on the network marriage dataset highlights the epochal nature of politicians as in-laws in the chaebol network, specific during the state-led industrialisation period (1961-1988).

Marital Partners of Extant Chaebol Families, 1948-2015

Each data point reflects the marital information for the five years to the observation
For continuity, samples are drawn only from 23 extant families as of 2015

FIGURE 4B. IN-LAW PROFILES OF CHAEBOL FAMILIES (ONLY FOR THE 23 CONTROLLING FAMILIES ACTIVE AT THE TIME OF STUDY)
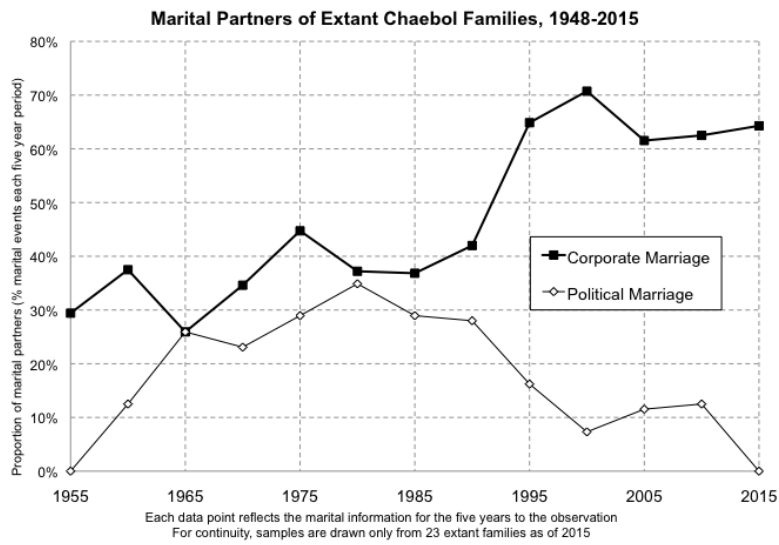
Notes: Own calculations, based on the updated network marriage dataset. In order to reflect the continuity of the same chaebol families, samples are drawn only from the 23 controlling families, active at the time of study (compiled as of 2015).

Market Reaction to Events of Network Marriage

CAR is significant at 1% level to network marriage and not to non-network marriage.
Sources: Own calculations by the market model, based on the 60 trading days for estimation
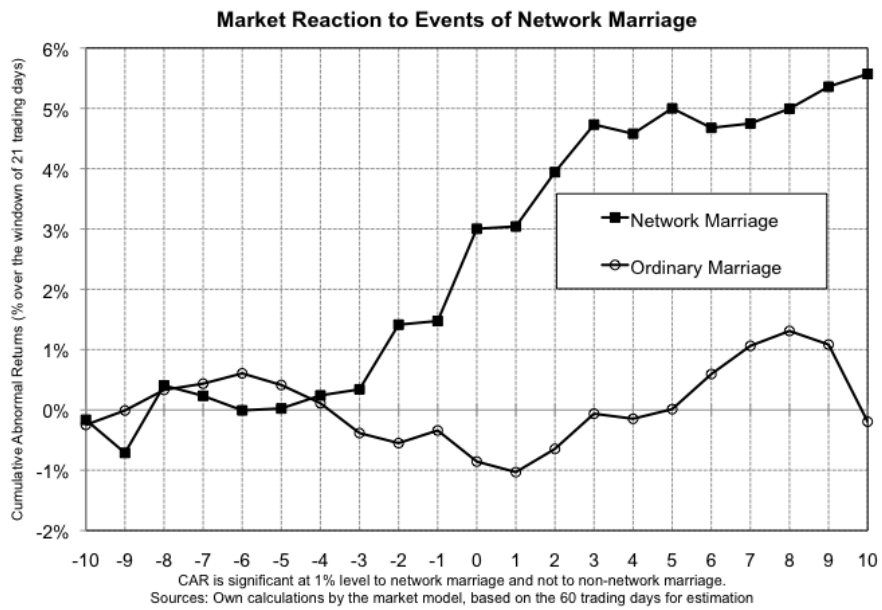
FIGURE 5. THE STOCK MARKET REACTION (CAR) ON THE EVENTS OF MARRIAGE

Notes: Own calculations by a mean-adjusted model, based on 60 trading days. The CAR from the network (5.70%) is significantly positive with a t-statistic of 3.13, while the ordinary CAR (-0.16%) is not significantly different from zero with a t-statistic of -0.07.
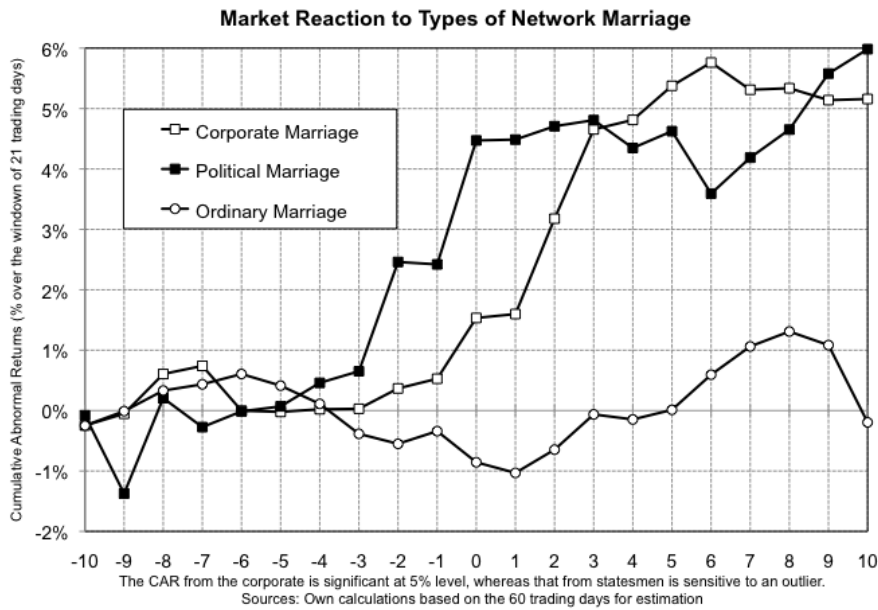
Market Reaction to Types of Network Marriage

The CAR from the corporate is significant at 5% level, whereas that from statesmen is sensitive to an outlier.
Sources: Own calculations based on the 60 trading days for estimation

FIGURE 6. DECOMPOSITION OF THE STOCK MARKET REACTION (CAR) BY TYPES OF ALL IN-LAW

Notes: Own calculations, based on 60 trading days. The CAR from the network with corporate owners (5.00%) is significantly positive with the t-statistic of 2.48. Alternatively, the significance of CAR from the network with politicians is sensitive to the presence or exclusion of an outlier. The significance of CAR from network marriages stays consistent, regardless of the treatment of the outlier. The CAR from ordinary marriage (-0.16%) is not significantly different from zero with the t-statistic of -0.07.

Market Reaction to Types of Corporate Marriage

CARs only for marriages across nouveaux and chaebol families are significant at 1% and 5% level.
Sources: Own calculations based on the 60 trading days for estimation
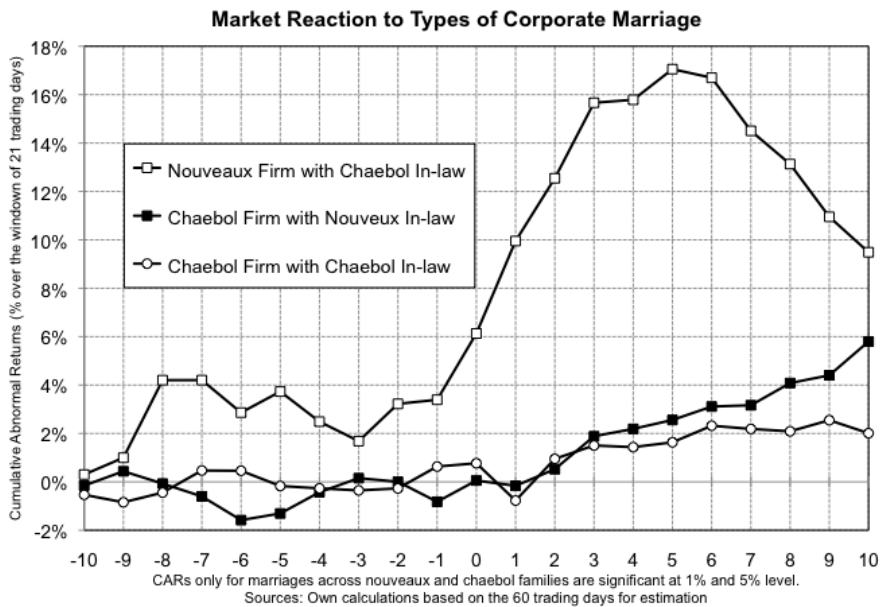
FIGURE 7. DECOMPOSITION OF THE STOCK MARKET REACTION BY TYPES OF CORPORATE IN-LAWS

Notes: Own calculations, based on 60 trading days. For nouveaux firms, the large CAR from the network with chaebol families (9.49%) is significantly positive with the t-statistic of 1.92. Alternatively, the CAR for chaebol firms from the network with nouveaux families (-5.80%) is also significantly positive with the t-statistic of 2.08. The lowest CAR among three pairs is between chaebol families (2.01%), and is not significantly different from zero due to the t-statistic of 0.60.

TABLE 1—THE CHANGE OF IN-LAW PROFILES IN KOREAN CHAEBOL FAMILIES FROM DICTATORIAL TO DEMOCRATIC REGIMES

A.   Based on all 52 chaebol families

Regime	Corporate	Spouse Others	Statesmen	Total
Democracy	92	37	12	141
Dictatorship	144	248	110	502
Total	236	285	122	643

Pearson chi2(2) = 63.8387   Pr = 0.000

B.   Based only on 23 controlling families active at the time of study (as of 2015)

Regime	Corporate	Spouse Others	Statesmen	Total
Democracy	77	32	11	120
Dictatorship	108	135	70	313
Total	185	167	81	433

Pearson chi2(2) = 32.0362   Pr = 0.000

Source: Own calculations

TABLE 2—THE MARKET REACTION TO INITIAL ANNOUNCEMENTS VS. ACTUAL WEDDING DATES

Market Model (60 days)	CAR on the Announced Dates		CAR on the Wedding Dates	
	(1a) Network	(1b) Non-network	(2a) Network	(2b) Non-network
CAR (-3,+3)	**3.66%***	-2.46%	-0.17%	1.16%
t-statistic	1.84	-0.93	-0.09	0.44
(number of events)	20	5	20	5

Source: Own calculations, based on the 60 trading days with the market model

* Significant at the 10 percent level.

TABLE 3—SAMPLE DESCRIPTION

Types of In-laws				
Network (79)				**Non-Network (27)**
Political	**Corporate**			
	SME w Chaebol	Chaebol w SME	Chaebol w Chaebol	
11	14	26	28	27

Notes: These sub-samples, 106 out of 643, have reported information on the precise dates around or before their weddings. 'SME w Chaebol' refers to SME samples whose abnormal returns are studied when these controlling families became in-laws to Chaebol families. 'Chaebol w SME' refers to Chaebol samples whose abnormal returns are studied when controlling families of these SME (or *nouveaux* firms) became in-laws with SME families. 'Chaebol w Chaebol' refers to Chaebol samples whose abnormal returns are studied when controlling families became in-laws with comparable Chaebol families.

TABLE 4—EVENT STUDY: UNIVARIATE TESTS ON MARRIAGE EVENTS BY TYPES OF IN-LAWS

	(1) CAR (-3,+3)	(2) CAR (-5,+5)	(3) CAR (-10,+10)	(4) CAR (-15,+15)
		Cumulative Abnormal Returns		
Set 1 A. Market Model (60 days)				
Network	2.90%***	2.92%***	3.35%**	3.13%*
(79 obs.)	(0.009)	(0.011)	(0.015)	(0.018)
Ordinary	-0.88%	-2.00%	-1.71%	-0.92%
(27 obs.)	(0.010)	(0.013)	(0.018)	(0.021)
Difference	3.78%***	4.92%***	5.06%***	4.05%**
	(0.009)	(0.011)	(0.016)	(0.019)
B. Mean-Adjusted Model (60 days)				
Network	4.21%***	6.45%***	5.70%***	5.37%**
(79 obs.)	(0.011)	(0.013)	(0.018)	(0.023)
Ordinary	-0.09%	-1.07%	-0.16%	0.54%
(27 obs.)	(0.013)	(0.016)	(0.022)	(0.027)
Difference	4.59%***	7.52%***	5.86%***	4.83%**
	(0.011)	(0.014)	(0.019)	(0.024)
C. Market Model (225 days)				
Network	2.77%***	2.60%**	2.88%**	2.39%
(79 obs.)	(0.008)	(0.010)	(0.014)	(0.017)
Ordinary	-0.60%	-1.60%	-1.31%	-1.28%
(27 obs.)	(0.012)	(0.015)	(0.021)	(0.025)
Difference	3.37%***	4.20%***	4.19%***	3.68%***
	(0.009)	(0.012)	(0.016)	(0.020)
Set 2 A. Market Model				
Corporate Owners	2.92%***	2.92%**	2.65%	2.43%
(68 obs.)	(0.010)	(0.012)	(0.017)	(0.020)
Statesmen	2.77%	2.91%	7.73%**	7.47%*
(11 obs.)	(0.018)	(0.023)	(0.031)	(0.038)
Ordinary	-0.88%	-2.00%	-1.71%	-0.92%
(27 obs.)	(0.010)	(0.013)	(0.018)	(0.021)
B. Mean-Adjusted Model				
Corporate Owners	4.46%***	5.04%***	5.00%**	4.72%*
(68 obs.)	(0.012)	(0.015)	(0.020)	(0.025)
Statesmen	4.72%**	6.18%**	10.05%**	9.37%**
(11 obs.)	(0.023)	(0.028)	(0.039)	(0.047)
Ordinary	-0.09%	-1.07%	-0.16%	0.54%
(27 obs.)	(0.013)	(0.016)	(0.022)	(0.027)
Set 3 A. Market Model				
Nouveaux Owners with Chaebol	11.26%***	11.00%***	6.49%	6.90%
(14 obs.)	(0.025)	(0.031)	(0.043)	(0.052)
Chaebol Owners with Nouveaux	0.94%	1.19%	1.50%	4.05%
(26 obs.)	(0.013)	(0.016)	(0.023)	(0.028)
Chaebol Owners with Chaebol	0.59%	0.49%	1.79%	-1.31%
(28 obs.)	(0.016)	(0.020)	(0.028)	(0.034)
B. Mean-Adjusted Model				
Nouveaux Owners with Chaebol	13.18%***	14.89%***	9.49%*	9.65%
(14 obs.)	(0.028)	(0.036)	(0.049)	(0.060)
Chaebol Owners with Nouveaux	2.66%	5.56%***	5.80%**	5.79%
(26 obs.)	(0.017)	(0.021)	(0.028)	(0.036)
Chaebol Owners with Chaebol	1.77%	-0.36%	2.01%	1.27%
(28 obs.)	(0.019)	(0.024)	(0.033)	(0.041)

Source: Own calculations (based on the 60 trading days and noted otherwise).

*** Significant at the 1 percent level.

** Significant at the 5 percent level.

* Significant at the 10 percent level.

	Cumulative Abnormal Returns (Control Group to Table 1.2.2)			
	(1) CAR (-3,+3)	(2) CAR (-5,+5)	(3) CAR (-10,+10)	(4) CAR (-15,+15)
A. Market Model (60 days)				
Network	0.37%	0.02%	0.84%	0.23%
(79 obs.)	(0.009)	(0.011)	(0.015)	(0.018)
Ordinary	0.21%	0.56%	0.21%	0.75%
(27 obs.)	(0.014)	(0.017)	(0.023)	(0.028)
B. Mean-Adjusted Model (60 days)				
Network	-0.38%	-2.00%	-0.33%	-2.16%
(79 obs.)	(0.010)	(0.012)	(0.017)	(0.021)
Ordinary	-0.01%	2.76%	-0.22%	-0.21%
(27 obs.)	(0.016)	(0.020)	(0.028)	(0.034)
C. Market Model (225 days)				
Network	0.81%	0.08%	0.84%	0.29%
(79 obs.)	(0.009)	(0.011)	(0.016)	(0.019)
Ordinary	-0.11%	0.21%	-0.61%	-0.52%
(27 obs.)	(0.012)	(0.015)	(0.020)	(0.024)
A. Market Model				
Corporate Owners	0.50%	0.08%	1.15%	0.40%
(68 obs.)	(0.010)	(0.012)	(0.017)	(0.021)
Statesmen	-0.49%	-0.38%	-1.03%	-0.88%
(11 obs.)	(0.015)	(0.018)	(0.025)	(0.031)
Ordinary	0.21%	0.56%	0.21%	0.75%
(27 obs.)	(0.014)	(0.017)	(0.023)	(0.028)
B. Mean-Adjusted Model				
Corporate Owners	-0.47%	-1.73%	-0.58%	-2.57%
(68 obs.)	(0.011)	(0.014)	(0.019)	(0.024)
Statesmen	0.19%	1.03%	1.18%	0.37%
(11 obs.)	(0.019)	(0.024)	(0.033)	(0.040)
Ordinary	-0.01%	2.76%	-0.22%	-0.21%
(27 obs.)	(0.016)	(0.020)	(0.028)	(0.034)
A. Market Model				
Nouveaux Owners with Chaebol	-0.57%	-2.70%	0.38%	7.38%
(14 obs.)	(0.024)	(0.031)	(0.042)	(0.051)
Chaebol Owners with Nouveaux	1.35%	2.62%	3.08%	-2.21%
(26 obs.)	(0.014)	(0.018)	(0.025)	(0.030)
Chaebol Owners with Chaebol	0.26%	-0.88%	-0.26%	-0.66%
(28 obs.)	(0.016)	(0.020)	(0.028)	(0.034)
B. Mean-Adjusted Model				
Nouveaux Owners with Chaebol	-0.61%	-1.73%	-0.58%	-2.57%
(14 obs.)	(0.026)	(0.014)	(0.019)	(0.024)
Chaebol Owners with Nouveaux	0.22%	1.73%	0.24%	-6.02%*
(26 obs.)	(0.016)	(0.020)	(0.027)	(0.034)
Chaebol Owners with Chaebol	-1.03%	-3.94%*	-2.39%	-4.77%
(28 obs.)	(0.018)	(0.023)	(0.032)	(0.039)

Source: Own calculations (based on the 60 trading days and noted otherwise).

*** Significant at the 1 percent level.

** Significant at the 5 percent level.

* Significant at the 10 percent level.