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Wirtschaft und Gesellschaft

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Idiosyncrasies of the superrich: On the political economy of wealth concentration in Austria



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Zusammenfassung

Die zunehmende Konzentration von Einkommen und Vermögen auf nationaler und internationaler Ebene ist ein Thema, das sowohl in der sozialwissenschaftlichen Forschung als auch in politischen Debatten verstärkt Beachtung findet. Selbst tiefgreifende Krisen wie die Finanzkrise 2008 oder die jüngste Covid-Pandemie haben in dieser Hinsicht keinen Trendwechsel bewirkt. Im Gegenteil, das Vermögen des reichsten 1 % ist weiterhin stark gestiegen. Dabei wird die enorme Vermögensungleichheit hauptsächlich durch eine kleine Gruppe von Personen und Familien mit hohem Vermögen (High Net Worth, HNW) getrieben. Während die Verfügbarkeit von Daten in Vermögensstudien als ein bekanntes und oft beklagtes Problem gilt – vor allem aufgrund fehlender statistischer Daten und Informationen – bleibt insbesondere die Gruppe der HNW-Haushalte weitgehend unerforscht. In dieser Studie zielen wir darauf ab, diese Forschungslücke zu schließen und zu einem tieferen Verständnis des Einflusses von HNW-Haushalten und deren Netzwerken auf die aktuelle Vermögensverteilung beizutragen. Auf Basis eines umfangreichen Datensatzes von Unternehmensbeteiligungen einer Stichprobe der 62 reichsten österreichischen HNW-Haushalte nehmen wir eine soziale Netzwerkanalyse (SNA) von Zwei-Modus-Netzwerken (Institutionen und Personen) vor, um Netzwerke von Unternehmensbeteiligungen und (indirekter) Kontrolle hervorzuheben. Ein zentrales Ergebnis ist, dass zahlreiche HNW-Netzwerke eine Vielzahl unterschiedlicher und spezieller Rechtsformen umfassen, was eine komplexe und undurchsichtige Kontrollstruktur schafft, die die Nachverfolgung wirtschaftlichen Eigentums erschwert. Darüber hinaus zeigen unsere Ergebnisse mehrere Eigentümlichkeiten in der Welt der Superreichen: Erstens, umfassen diese Netzwerke einen bedeutenden Anteil an Immobiliengesellschaften, Holdings und insbesondere Privatstiftungen. Zweitens, identifiziert unsere Netzwerkanalyse zahlreiche stark miteinander verbundene, übergreifende Knotenpunkte innerhalb und zwischen HNW-Haushalten, bei denen es sich oft um Anwälte und Treuhänder:innen handelt, die als Beauftragte, Strohleute und Verwalter:innen erheblicher Vermögen fungieren. Drittens, besteht eine bemerkenswerte Verbindung zwischen der Anhäufung und dem Erhalt beträchtlichen Vermögens und der politischen Nähe von Netzwerken. Schließlich zeigen unsere Ergebnisse, dass das gesamte Netzwerk der vermögendsten österreichischen HNW-Haushalte dicht miteinander verknüpft ist.

Abstract

The increasing concentration of income and wealth on the national and international level is a topic that has received increased attention both in social science research as well as public policy debates. Even severe crises such as the GFC in 2008 or the recent Covid-Pandemic have not led to any trend reversal in this respect. On the contrary, the wealth of the top 1% has continued to rise sharply. Yet, it has been shown that the huge wealth discrepancy is mainly driven by a small group of High Net Worth (HNW) individuals and families (households). While data availability is a well-known and often-lamented problem in wealth studies, due to missing statistical data and information, especially the group of HNW-households, remains largely unexplored. In this study we aim to address this research gap and contribute to a deeper understanding of the impact of HNW-households and their networks on current wealth distributions. Based on an extensive data set of company ownerships of a sample of the 62 richest Austrian HNW-households, we apply a social network analysis (SNA) of two-mode networks (institutions and persons) to highlight networks of corporate ownership and (indirect) control. An overall finding is that numerous HNW-networks involve a multitude of legal entities, creating a complex and opaque control structure that complicates the tracing of economic ownership. Besides this, our findings show several idiosyncrasies of the superrich: First, these networks include a significant proportion of real estate companies, holdings, and private foundations. Second, our SNA identifies numerous highly interconnected interlocking directorates within and between HNW households, who function as agents, strawmen, and administrators of substantial wealth, often lawyers and trustees. Third, a notable link exists between the accumulation and preservation of substantial wealth and political proximity. Lastly, our SNA findings demonstrate that the overall network of the wealthiest Austrian HNW-households is densely interconnected.

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1. Introduction and Motivation

The increasing concentration of income and wealth on the national and international level is a topic that has received increased attention both in social science research and public policy debates. Even severe crises such as the GFC in 2008 or the recent Covid-Pandemic have not led to any trend reversal in this respect. On the contrary, the wealth of the top 1% has continued to rise throughout these crises. Since 1995, billionaires' share of global wealth has risen from 1% to over 3% (Chancel et al., 2021). The crisis-resilience of wealth concentration can be observed for almost all European countries and is again particularly strong for the top 1% of the wealthiest households. In this study, we particularly focus on the example of Austria. While due to different data availability issues, it is challenging to come up with exact data on the wealth share of very wealthy individuals and households, different authors and studies estimate the wealth share of the top 1% in Austria from 25% to 41%. The very ambitious and widely-used World Inequality Database, founded by Thomas Piketty and several colleagues, estimates this group's wealth share in Austria to be about 31% in 2021. In a comparative perspective, Pfeffer and Waitkus (2021) show that wealth concentration among the wealthiest percentiles is particularly high in Austria and argue that this is mostly driven by inequalities in the housing sector.

Notwithstanding the debates about how to best measure and present wealth inequality, there is large agreement in the literature that the huge wealth discrepancy is mainly driven by a tiny group of High Net Worth (HNW) individuals and families (henceforth: HNW-households), who have increased their wealth share over the last decades (Saez and Zucman 2022; Bach, Thiemann, and Zucco 2019; Piketty and Saez 2014). While a growing body of research is trying to measure the wealth of the HNW individuals, there is still very little information about how their wealth is structured and how they are connected. Therefore, our paper provides an explorative network analyses approach to map the complex connections among HNW-households. Similar to Rossier et al. (2021) in their paper on Swiss elites we compiled a unique data set of Austrian HNW-households and apply a social network analysis to uncover not just the structure of their corporate ownership but also their influence across corporate and political landscapes. Network analysis is particularly well-suited for this study as it allows for the visualization and quantification of complex interrelationships and dependencies among HNW-households, offering insights into the structure, influence and control of their connections. While this project is influenced by the approach of Rossier et al. (2021) to use network analyses to look at HNW-households our focus and methodological approach differ. Rossier et al. examine the century-long dynamics of Swiss elite networks through network analysis, focusing on integration and fragmentation over time. In contrast, this study centers on contemporary Austrian wealth elites, using a case-specific approach of an analysis of a unique dataset of company data.

More precisely, we look at the richest 62 HNW-households in Austria as defined by the Trend list of the richest Austrians (Trend.at 2023). We are able to show that the wealthiest HNW-households in Austria are part of huge networks that span across sectors and are often connected among each other. By applying a cluster analysis, we illustrate how HNW-networks differ based on the sources of wealth and the composition of their networks of different legal forms of companies, cooperations and trusts.

Different network measures and tools such as community detection, allow to highlight central figures within and between HNW-networks, acting as key players and gatekeepers who can influence multiple other actors. The control over widespread networks allows HNW-households to gain potential political and societal impact. Therefore, extreme concentration of wealth and income has also become a prominent topic in various public debates, particularly in times of economic crisis.

First, the crisis-resilience of HNW individuals and households is at the center of a moral debate

and has led to several calls for the introduction of wealth taxes. Since the net wealth tax was abolished in 1994 and the inheritance and gift tax in 2008, Austria has one of the lowest wealth tax rates in international comparison. The real estate transfer tax, the only remaining wealth tax in Austria, therefore only leads to a share of wealth taxes of 1.4% of total tax revenue in 2020, which is far below the OECD average of about 5.5% (OECD 2022). Accordingly, comparative European studies have shown that the effect of inheritances is particularly strong in Austria, and thus intergenerational economic mobility is very low in Austria. More concretely, Fessler and Schuerz (2015) have shown that, on average, inheritances increase the position in the wealth distribution by 52%.

Second, several authors have argued that a high concentration of wealth also bears some non-trivial societal consequences as HNW-households can often use their economic power to influence political decisions (Shaxson and Godfrey 2024). They do this either directly by making generous donations to individual politicians or political parties or indirectly by owning or holding shares of large and influential media companies to influence public debate according to their interests. While such phenomena have been observed and documented in various countries, Austria has been the focus of several corruption scandals involving the right-wing conservative government in recent years (Austrian Parliament 2023; Kurier 2024; Friedrichs 2024). In this context, the involvement of several wealthy individuals and the potential impact on economic and financial policies were at the center of controversial debates. However, besides these recent scandals, wealthy individuals have also made several other attempts to gain political impact. The most prominent example was the political engagement of the Austro-Canadian billionaire Frank Stronach, who funded and financially supported a political party, which made it into the Austrian parliament in the 2010s. Another Austrian example is the industrialist Hans Peter Haselsteiner, who initially sat in parliament for the 'Liberal Forum' and then, over the last few years, donated several million euros to their successor party, 'NEOS' (Austrian Court of Audit 2024). Against this background, wealth concentration can also be discussed as a severe threat to democracy, as it provides a very small number of people privileged access to political power and allows them to impact public debates (see, e.g. Frank Stronach's suggestion to 'end the dominance of party politics' (Stronach 2022).

Finally, there is also an increasing debate on the ecological dimension of wealth discrepancy, i.e. the very unequal distribution of carbon emissions among world regions, especially between HNW-households and the rest. Besides the obvious fact that the highly luxurious lifestyles of superrich people in general are also associated with a high ecological impact (Otto et al. 2019), private space tourism is yet another particular case. The estimated carbon dioxide emissions associated with the fuel needed for a private space flight are about 300 tons (Dallas et al. 2020; Gammon 2021), which is about a quarter of the total carbon emissions of all 11.5 million inhabitants of Burundi on that day (Global Carbon Project 2021).

To sum up, wealth discrepancy is a multi-dimensional societal challenge and is still increasing in most countries, even throughout crises. Yet, as we will show in this paper, there are several blind spots in the academic literature, particularly concerning the upper group in the wealth distribution and the small fraction of very wealthy high net worth individuals. More specifically, there are hardly any comprehensive studies on the interconnections and networks of HNW-households.

In light of this context, this paper seeks to contribute to the discourse on wealth concentration by providing a comprehensive network analysis to highlight various channels of influence of HNW individuals and families across different societal sectors in Austria. Our focus on the wealthiest Austrian individuals and families allows us to illuminate the typical arenas of connection among HNW-households, as well as the structural dimensions of wealth concentration. By aiming to highlight the idiosyncrasies of the superrich, we seek to address the following research questions: First, what are the typical structures of company networks within each HNW-household? How are these households interconnected with each other? What kinds of institutions, think tanks, and foundations are integral to their networks? Second, how

and to what extent do the superrich in Austria endeavor to exert influence across different social fields (e.g. economy, politics, media, sports, and society)? Which legal forms and constructs play a significant role in the networking of HNW individuals and families?

The remainder of the paper is structured as follows: In section 2, we present results from an extensive literature review related to HNW-households. Section 3 describes the data and data collection strategy we used in our study. Section 4 describes our methodological approach and section 5 discusses our main results. Finally, section 6 provides some conclusions.

2. Literature Review

A review of the literature on HNW-individuals and families and extreme wealth concentration shows a growing interest in studying the superrich during the last years (Chancel et al. 2022). However, there are still a lot of research gaps that need further investigation such as accounting for missing wealth data, analyzing main common characteristic of superrich in different national contexts and examining the structures and networks that enable them to gain wealth and political influence (Koh et al. 2016).

Much of the challenges associated with research in this field are due to a severe lack of statistical data. Macro-economists have developed different mathematical methods to account for worldwide capital and wealth distribution and estimate the wealth of the ‘missing rich’ (Chakraborty and Wai 2018; Chancel et al. 2022; Hope and Limberg 2022; Piketty 2017; Vermeulen 2016; Wildauer and Kapeller 2022). These studies use various statistical correction methods to address the problem of superrich households either not being part of the sample in official wealth surveys or unwilling to participate. However, since the degree of wealth concentration is extremely high, even a small number of HNW-households significantly distort the distribution. In Austria for instance the wealthiest household in the first three waves of the ‘Household Finance and Consumption Survey’ (HFCS) survey owns a net worth of 20-40 million euros, leading to an estimated average net wealth of about 2 million euros for the top 1% and a share of total wealth of about 25% (Fessler, Lindner, and Schürz 2019). When comparing these estimates with ranking lists of the wealthiest Austrians published by magazines such as Trend or Forbes, it becomes evident that the wealth at the uppermost percentile of the distribution is significantly underestimated. To illustrate, the combined wealth of the top 1% in the official HFCS dataset equals the wealth of the eight richest individuals and families listed in these rankings. Ferschli et al. (2017) apply a statistical correction method for correcting for the upper tail of the wealth distribution and show that the richest 1% holds 41% of total wealth in Austria. These macro-economic analyses gather important data on national and global inequality and wealth of a superrich elite; however, they cannot provide further information on the characteristics and networks of these individuals or groups.

Other works analyze the socio-demographic characteristics of superrich: Freund and Oliver (2016) describe changes in extreme wealth and find that half of Europe’s billionaires inherited their wealth, which is particularly relevant for the Austrian case, where inheritance taxes have been completely abolished in 2008. Anand and Segal (2017) provide a global perspective on inequality by showing that in 2012, advanced economies only comprised 14% of the world's population but accounted for 77% of the top 1% global rich. At the same time other studies such as Wai and Lincoln (2016) chose more individual, psychological explanations for wealth and draw a connection between elite education, cognitive ability and the superrich. Moreover, they found that ‘[s]mart and more educated people tended to be wealthier, give more, and have wider, wealthier, and more powerful social networks.’ (Wai and Lincoln 2016)

Another research strand that systematically studies networks of powerful individuals is elite studies (Bühlman et al. 2017; Hartmann, 2018; Lunding, Ellersgaard, and Larsen 2020). Korom (2013), for instance, conducted a study about Austria’s economic elites, where he analyzed the

background, political affiliations and networks of Austria's top managers. However, the target group of elite studies differs from our study, because 'elites' are not to be equated with 'superrich'. In many studies, the criteria for being part of the elite, is whether individuals have the power to influence society through their (societal) position, which does not necessarily include being superrich (Hartmann 2018).

Overall, there is a lack of comprehensive studies on the interconnections and networks of HNW-households. Quantitative research on inequality has demonstrated that official data often underestimate the wealthiest segment of the population. However, this body of literature fails to provide explanations and consequences for wealth concentration and does not concentrate on the very small number of HNW individuals and families who significantly influence wealth distribution. Conversely, qualitative ethnographic studies on socioeconomic elites do not fully capture the hidden networks within and between HNW-households, as wealth is not always the sole relevant criterion, and power through capital is often exercised indirectly and informally. Additionally, research on elite networks in Austria is rare compared to Switzerland, where researchers also created the 'Swiss Elite Database' to gather information on national elites (Bühlman et al. 2017). While characterizing the superrich and their behavior, qualitative studies by Freund and Oliver (2016) or Wai and Lincoln (2016) do not identify concrete networks.

In the case of Austria and similar to other countries, there is little information about the superrich, although they hold a huge part of economic power through their capital. Nevertheless, some connections between superrich and politics are publicly known such as Frank Stronach, who founded his own political party and donated millions of euros to his party Team Stronach, Heidi Goess-Horten, Stefan Pierer, Klaus Ortner and many more, who donated huge amounts of money to the Austrian people's party (ÖVP) and Hans Peter Haselsteiner, who donated millions for the NEOS party (Austrian Court of Audit 2024). Although there are many indications that the group of superrich are a relevant and influential factor for the organization of economy and politics there is a current research gap on this issue, particularly the personal, economic, and political networks of HNW-households. The literature review shows that the method of combining data on corporate ownership structures and SNA is a very new and promising approach to shed light on these hidden networks.

3. Data and data compilation strategy

In this section, we describe the data sources that we use for our empirical analysis. For the selection of HNW-households we use a ranking of the wealthiest Austrians for the year 2022 created by the Austrian magazine Trend and select a sample of the 62 richest individuals or families in this list. The set threshold of 62 depicts persons or families with assets of more than 500 million euros (see table 2 in the appendix for an overview).

For the examination of the structures of corporate ownership and control we use company data from the 'Wirtschafts-Compass' (hereafter WiCo), a platform that provides business information about Austrian companies (with company headquarters/registered offices in Austria). It allows us to collect data on the organizational structure of firms as well as on ownership structures and individuals in top management positions of these companies. WiCo uses and compiles data from the Register of Beneficial Owners (WiEReG) provided by the Austrian Ministry of Finance. The WiEReG was established 'for the purpose of preventing money laundering and terrorist financing, and contains data on the beneficial owners of companies, foundations and trusts'¹. A beneficial owner is defined as 'those individuals to whom a company, foundation or trust can ultimately be economically attributed'². Using WiCo (instead of directly using WiEReg) has three advantages: First, it allows for searching individual

¹ <https://www.bmf.gv.at/en/topics/financial-sector/beneficial-owners-register-act/Register-of-Beneficial-Owner.html> (accessed on 17th June 2024)

² see *ibid.*

persons (and not only companies). Second, it provides additional information on whether persons who are involved in these structures might have (potential) links to ‘politically exposed persons’ (PEP) (e.g. members of the parliament, persons in public office nominated by political parties, etc.)³. Third, WiCo also provides information on individuals’ past positions (e.g. previous positions in companies or linkages with companies that have been liquidated) which adds an important (intertemporal) dimension into our analysis of the network structures among the superrich.⁴ The data from WiCo was downloaded manually in html format and compiled with a Python code into a spreadsheet.⁵

Gathering and compiling the data for our study comes not without several conceptual and practical challenges. First of all, identifying the main source of wealth (as shown table 2 in the appendix) is not always clear (which, however, was also a main motivation in conducting this study). In a first step, we thus relied on a mix of formal (e.g. Trend ranking, Munzinger archive online) and informal sources (e.g. Newspaper, Wikipedia) and decided on a case by cases basis from where to start the data gathering procedure (i.e. the company or institution that is most responsible for the wealth creation of an HNW-household; see also below). Second, WiCo includes only PEP-persons who were exposed at the time of data collection, which is an important limitation when analyzing potential political links of the superrich⁶. To address this limitation, we manually classified persons as politically exposed whenever we found such cases (i.e. mostly (family members of) former politicians). Furthermore, we compiled a list of Austrian politicians based on the information available from the website of the Austrian parliament⁷, which includes past members of the Austrian Parliament, the Federal Council (Bundesrat) and the regional state parliaments (Landtage) and matched it with the names of the individuals that are listed in the WiCo dataset.

Finally, we also applied a categorization scheme based on a dictionary that defines seven types of institutions and companies listed in WiCo. For the categorization of the companies, we used a search-string of the most commonly-used terms associated with each category (see appendix for a description) and manually corrected this categorization⁸:

- Private foundations
- Real Estate companies
- Investment management companies
- Asset and wealth management companies
- Media companies
- Lawyers & trustees
- Uncategorized institutions

³ According to § 1 Abs. 6 ff Geldwäschegesetz (GwG), a PEP is a natural person who hold a high-ranking, important office or exercise a public office whose political significance is comparable. Family members or persons with a close economic relationship to a PEP may themselves be classified as PEP-related (‘PEP-Bezug’). Our study does not distinguish between these two categories.

⁴ Former positions (‘gelöschte Funktionen’), however, are not available for those HNW households which were collected during an initial pretest between April 2022 and December 2022 (denoted with an asterisk (*) in table 2). The remaining 57 households were collected between January 2023 and January 2024 and include full information as described above.

⁵ With the exception of the data collected during the pretest which was compiled and added manually.

⁶ The most prominent examples for individuals that are not classified as ‘politically exposed’ are the former Austrian chancellor and politician Alfred Gusenbauer or the wife of the former minister of economic affairs Martin Bartenstein (a HNW individual in our sample), Ilse Bartenstein.

⁷ See https://www.parlament.gv.at/recherchieren/personen/parlamentarierinnen-ab-1848/parlamentarierinnen-ab-1918/index.html?WFW_008%D0%9C=M&WFW_008W=W&WFW_008R_WF=FR&WFW_008GP=ALL_E (accessed on 17th June 2024)

⁸ However, since a substantial share of companies in some HNW households in our sample used completely random names such as ‘Laura 2019 Zwei GmbH’ some of our categories may slightly underestimate their total share

We refer to real estate companies when their names indicate involvement in some form of real estate management and housing development. Involvement in the real estate sector is a source of mega-wealth, but it also offers lucrative and often speculative opportunities to secure wealth over generations and to further concentrate wealth.

The category of Investment management companies (‘Beteiligungsgesellschaften’) per definition, provides an opportunity to manage and control small to huge networks of companies, often in the private equity and venture capital sector and therefore is interpreted as a form of institutionalized corporate control of subsidiary companies within HNW-household networks. Furthermore, the legal form of the holding company, provides tax advantages, such as the use of loss carryforwards and the reduction of withholding taxes.

Private foundations (‘Privatstiftungen’) are a very commonly used legal form for Austrian HNW-households. These entities have become increasingly significant in managing large inheritances and ensuring family wealth continuity across generations since their establishment in 1993.

Since we are also interested in the various channels, through which HNW-households and superrich individuals aim to gain political and public impact, we included the category media companies. We define them as any kind of company engaged in media management, media broadcasting and publishing, such as TV, print, radio and digital media companies. Potential forms of impact via corporate ownership or financial participation include marketing for companies and influence on the editorial guidelines to prevent unwelcome reporting. Furthermore, the media industry itself provides a very lucrative business sector to accumulate and further increase wealth. This is particularly valid for Austria’s very concentrated media landscape with the Dichand family – part of our sample of Austrian richest HNW-households – who owns the Kronen-Zeitung (Austria’s most-read daily newspaper⁹) and exerts substantial control over the Austrian media market (Grisold and Grabner 2017)¹⁰.

Finally, we included the categories of asset and wealth management companies (‘Vermögensverwaltungsgesellschaft’) and lawyers and trustees (‘Rechtsanwälte und Treuhänder’). The latter oftentimes function as legal and financial experts for various companies simultaneously and therefore play a crucial role in the connection within and between HNW-households.

4. Methodological Approach

In this paper, we apply a mixed-methods approach by combining qualitative and quantitative analyses of various forms of HNW-households’ connections within the business environment in particular and society in general. More precisely, we rely on social network theory¹¹ to examine the social structure and networks of HNW-households in Austria. In social science there is a long tradition of employing social network analysis for capturing a great variety of relations (e.g. friendship, communication, control, etc.) between different actors (e.g. individuals, companies, institutions, countries, etc.) (Freeman 2004; Granovetter 1983; 1985). Against this background, we apply Social Network Analysis (SNA) to map networks of ownership and control around HNW-households. Therefore, we construct two-mode networks

⁹ See <https://www.media-analyse.at/admin/pages/htmlTemplateTable.php?xyCat=496228,496229,496230,496240,496241,496260,496274,496279,496283,496290,496313> (accessed on June 17th 2024)

¹⁰ In this context, it should be mentioned that another HNW individual in our sample owns shares from the Kronen-Zeitung: René Benko. However, this link becomes not visible in WiCo as Benko uses a foreign investment management company for holding these shares. This is a limitation that cannot be addressed in this study, however it also shows that overall we rather underestimate the level of connectivity within and between HNW-households

¹¹ We use the software Pajek, which was developed for the analysis and visualization of graphs and large networks (Mrvar & Batagelj, 2016; Nooy et al., 2018).

(Latapy, Magnien, and Vecchio 2008), where individual persons (including HNW-individuals) and business institutions represent different classes of nodes and individuals' company positions (i.e. shareholders, CEO, board of directors) represent the edges of the network. Furthermore, we make use of the categorization of institutional nodes as well as the categorization of individuals as PEP.

Our empirical research strategy is based on a snowball sampling procedure in order to analyze company ownership and control on two levels (starting from the HNW-household group of individuals comprising each HNW-household or family). In doing so, we focus on interlocking directorates, i.e. multiple positions of individuals in different companies which we treat as a proxy of an HNW-households' ability to exert *indirect* control on these companies as well as extended company control via companies, sub-companies and various other legal forms of corporate connections.

For the interpretation of the social network structures of HNW-households and the overall network of the superrich in Austria, we make use of three main social network measures. First, we interpret overall degree centrality, i.e. the number of edges (directed arcs) connected to one node as an indicator of involvement and control in a network. Second, we interpret network density, i.e. the number of edges between nodes within a network divided by all possible networks as an indicator for cohesion and proximity within a sub-network. Third, we interpret the level of degree centrality – but particularly betweenness centrality – of individuals (and institutions) as a measure of their relevance as 'interlocking directorates' for connecting different HNW-household networks. In doing so, we aim to highlight typical patterns of network structures in mega wealth concentration. Eventually, we use our categorization of nodes as an indicator for patterns and clusters within our overall network. In the visualization of the HNW-household networks in section 5 the size of the nodes depends on the number of companies that are under control and/or ownership (degree centrality).

5. Results

The overall results of our study can be summarized as follows:

- Super-wealth in Austria is extremely concentrated even among the wealthiest HNW-households.
- The superrich in Austria are strongly male-dominated.
- There is a significant level of connectivity among the wealthiest HNW-households
- This connectivity is to a large extent facilitated by a small number of single individuals ('interlocking directorates') who hold multiple positions within the network.
- The analysis suggests the existence of different 'wealth biographies' among the superrich in Austria, in particular the division between an 'industrial' mode and a more 'discrete' mode of wealth accumulation. While the former mode comprises HNW-households with a strong industrial (manufacturing) background, the latter mode is mainly based on the acquisition of real estate assets.
- The networks of the superrich in Austria are characterized by several idiosyncrasies which include not only the general obscurity of corporate (network) structures but also the special role of private foundations, the central position of single 'agents' and the high share of politically exposed persons within the networks.

The remainder of this chapter presents these findings in two steps: First, section 5.1. provides an overview of the entire sample of HNW-households and takes a bird's eye view by focusing on the issue of interconnectedness (i.e. network linkages *within* our sample of individual HNW-households; section 5.1.1) and a cluster analysis (5.1.2) that aims to substantiate our hypothesis

of different ‘modes’ of wealth accumulation (5.1.3). Second, section 5.2. presents various idiosyncrasies of the superrich in Austria that deserve a more detailed discussion, in particular the special role of real estate companies (5.2.1), media companies (5.2.2), private foundations (5.2.3) and the central role of political proximity via the discussion of politically exposed persons (5.2.4)

5.1. Overview

The basic information derived from our data sample (see table 2 in the appendix) already conveys the first results regarding the structure of the superrich in Austria. First of all, superwealth is extremely concentrated even among the wealthiest HNW-households. The wealthiest household (Porsche&Piëch) possesses more than a fifth (22%) and the top 5 households possess almost half (44%) of the total net wealth of the 62 households under study¹². Second, the superrich in Austria are strongly male-dominated. Within the 62 richest households, we find 55 listed male individuals (and other family members) but only 7 female individuals (and other family members). Third, an overview of the main sources of wealth creation in table 2 already points toward different biographies or ‘modes’ of wealth accumulation that can roughly be divided into a classic ‘industrial’ and a more ‘discrete’ mode. The former comprise sources of wealth derived from the ownership of various industrial companies, while the latter often draw from the ownership of real estate and/or various financial/company shareholdings. The discrete mode also comprises wealth generation based on large-scale inheritances or is often based on assets from previous company sales. Fourth and final, there are also past politicians that are part of our sample (Ministers and Members of the Austrian Parliament), which already shows that some superrich are also part of the political elite.

5.1.1. Overall network of the superrich in Austria

To achieve a deeper understanding of the typical areas of connection and the connectivity within the network of the superrich in Austria, we first compiled the overall network of all high-net-worth HNW-households in our sample comprising a total 65,449 edges and 22,526 nodes (see table 2 in the appendix). Notably, by applying our two-level methodological approach of corporate ownership and control structures we found that almost all HNW-households in our sample are interconnected via personal or institutional interlocking directorates; in fact, only one HNW-network is not connected to the overall network. In total, approximately 21.8% of all nodes in our sample are connected to more than one HNW-household (represented as red nodes in Figure 1). Additionally, about 11.0% of all connections among HNW-households appear in more than one HNW-household. Figure 1 demonstrates a significant level of connectivity among super rich households in Austria, especially given that our sample includes only the networks of 62 HNW-households.

¹² Just to provide some context on the magnitude of their wealth: The cumulated wealth of 62 richest HNW-households in our sample corresponds to more than 40% of Austria’s GDP (188 billion to 447 billion in 2022).

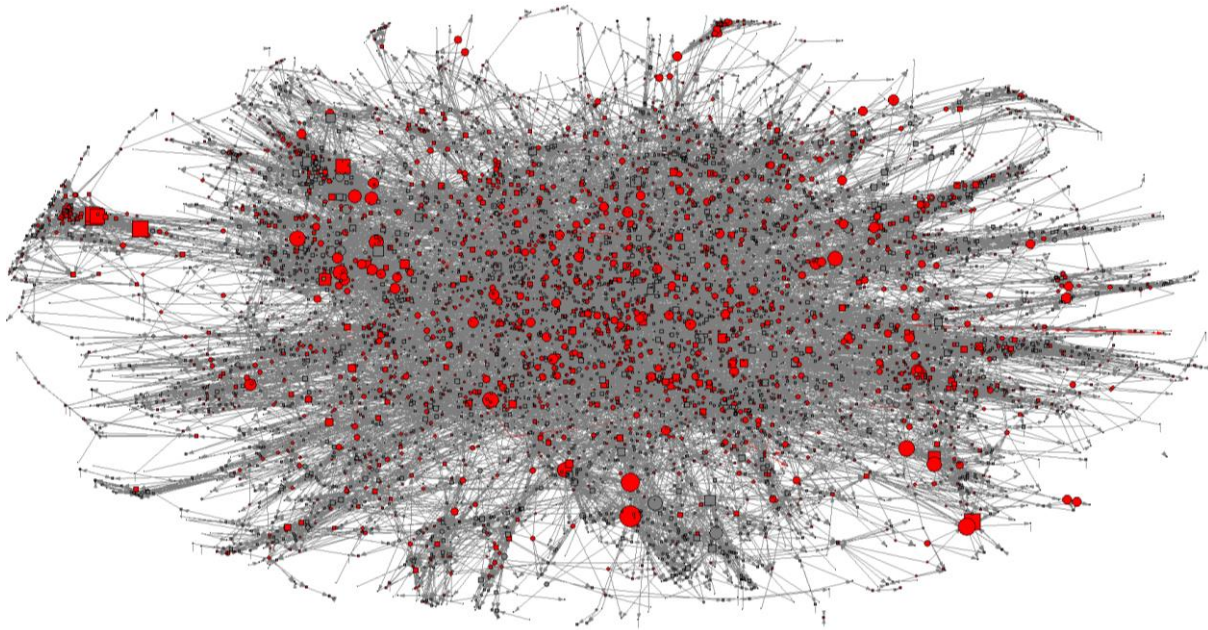


Figure 1: network of the 62 richest HNW-households in Austria. Size represents the degree centrality of nodes, red indicates 'connecting nodes'. Nodes with one connection are not included.

Our network analysis shows that central key linking nodes between various HNW-households, are represented particularly by individuals who hold or have held multiple positions across different companies and foundations as managing directors, shareholders, board members, and supervisory board members. These individuals facilitate numerous synergies. In total, we identified 13 examples of individuals with over 100 positions or corporate roles in over 100 companies (with a peak of 488 positions in 277, and more than 500 when including former roles)¹³ (see Table 1). This extraordinary number alone clearly indicates that it is arguably impossible for any individual to perform any actual operational role in these companies. However, while in most cases these central agents are not part of the original superrich in our sample, there are also three members of the superrich-list. The analysis of betweenness centrality shows similar results. Again, specialized wealth management lawyers are among those nodes with the highest betweenness centrality and thus play a core role in the connection within and between HNW-households¹⁴.

Table 1: Top 20 Interlocking directorates with the highest degree centrality. Members of the Trend-list of Austrian superrich are printed in bold.

Name	Degree centrality (including former positions)	Number of corporate positions (including former positions)
Pirolt Manuel, Mag.	249 (277)	488 (520)
Stadler Claus, Dipl.-Ing.	116 (185)	230 (308)
Haring Karl	190 (225)	213 (264)
Winkler Christian	191 (231)	207 (270)
Möstl Michael, Ing.	97 (150)	193 (255)
Jost Bernhard	133 (133)	133 (133)
Fletzberger Heinz	64 (126)	127 (206)

¹³ There are many examples of interlocking directorates with multiple positions in one company or foundation, which explains the differences between the number of positions and the number of institutions. Degree centrality is based on the number of connections between two nodes, regardless of how many positions establish this connection.

¹⁴ It should be noted that we found two companies with a high betweenness centrality ('Wiener Börse AG' and 'Einlagensicherung Austria GmbH'). However, we decided to exclude them from our analysis, since a connection to these institutions is based on a legal obligation for companies.

Kneussl Maximilian	104 (122)	121 (142)
Breiteneder Johann	109 (146)	116 (166)
Mühlberger Marcus, Dr.	111 (111)	112 (112)
Harsich Christian, Dr.	101 (180)	110 (203)
Jelitzka Daniel, Mag. Dr.	93 (151)	110 (198)
List Hans Christoph	74 (85)	108 (126)
Aghdam Reza Akhavan	76 (130)	91 (161)
Lerner Christoph	82 (88)	85 (96)
Pistotnik Karl, DDr.	39 (158)	82 (236)
Breiteneder Bettina, Mag.	69 (127)	79 (148)
Kirschner Alexander, MSc.	40 (58)	79 (97)
Tojner Michael, DDr.	56 (129)	76 (192)
Stadlhuber Christoph, DI	37 (224)	75 (270)

However, within the sample of companies analyzed, three companies also have a degree of centrality of more than 100: ‘WINEGG Realitäten GmbH’, ‘Red Bull GmbH’, and ‘Speedinvest X GmbH’. ‘WINEGG Realitäten GmbH’ serves as a prototypical instance of nested real estate firms, characterized by extensive connections to smaller real estate enterprises. ‘Red Bull GmbH’ functions as the central node within the transnational Red Bull corporation. In contrast, the various ‘Speedinvest’ companies represent a distinctive example of the network structures typical of HNW-households in Austria. Founded in 2011 as a venture capital firm by Oliver Holle, the company has raised over one billion dollars in total and focuses on a wide array of tech startups. While the firm now has international institutional investors such as New Enterprise Associates and the European Investment Fund (EIF) as its main backers, wealthy Austrians such as Dietrich Mateschitz and the Dichand family were among the earliest significant investors in ‘Speedinvest’.

In our analyses, we found that the different funds and sub-companies are intensely woven into the investment activities of the families and the foundations we examined. Three of the seven institutions with the highest betweenness centrality belong to the ‘Speedinvest’ network. This shows the unique role ‘Speedinvest’ plays for super high net worth individuals in Austria and illustrates how the complex and multilayered structures of firms and foundations of the families in our networks and the structure of investment funds work together.

5.1.2. Cluster analysis

In a next step, we used our categorization of institutions and companies for a simple cluster analysis of patterns of wealth biographies in order to develop a better overall understanding of the various ways in which HNW-households store, manage and expand their wealth. We also included a selection of network variables (see Table 4 in the appendix for an overview). The analysis suggested the existence of nine different clusters (see Figure 16 in the appendix). However, roughly half of all households are grouped within one cluster (cluster #1 on the left side in Figure 16) while four other clusters consist of only one household each (clusters #3, #6, #8 and #9). For a more detailed inspection of the cluster properties, we refer to Figure 17 in the appendix which displays boxplots for each variable per cluster. Although this analysis reveals a significant level of heterogeneity among the superrich, two main patterns of wealth accumulation become visible: First, there is a strong negative correlation between the ownership of real estate companies and uncategorized companies (which serve as a proxy for more classical manufacturing companies) which confirms the abovementioned division between an industrial mode (clusters #1, #7 and partially also #5) and a more ‘discrete’ mode based on real estate assets (cluster #2 and partially also cluster #4 and #5; see Figure 3 and

Figure 18 in the appendix which shows a similar picture with regard to private foundations). Second, a similar negative correlation exists between real estate assets and the share of politically exposed persons (PEPs) within a household's network (Figure 2; this is also confirmed through a positive correlation between the share of uncategorized companies and PEPs as shown in Figure 19 in the appendix). This in turn confirms linkages between 'industrial wealth' and the 'political' (in the sense of the definition of PEPs which also includes persons with positions in state-owned companies).

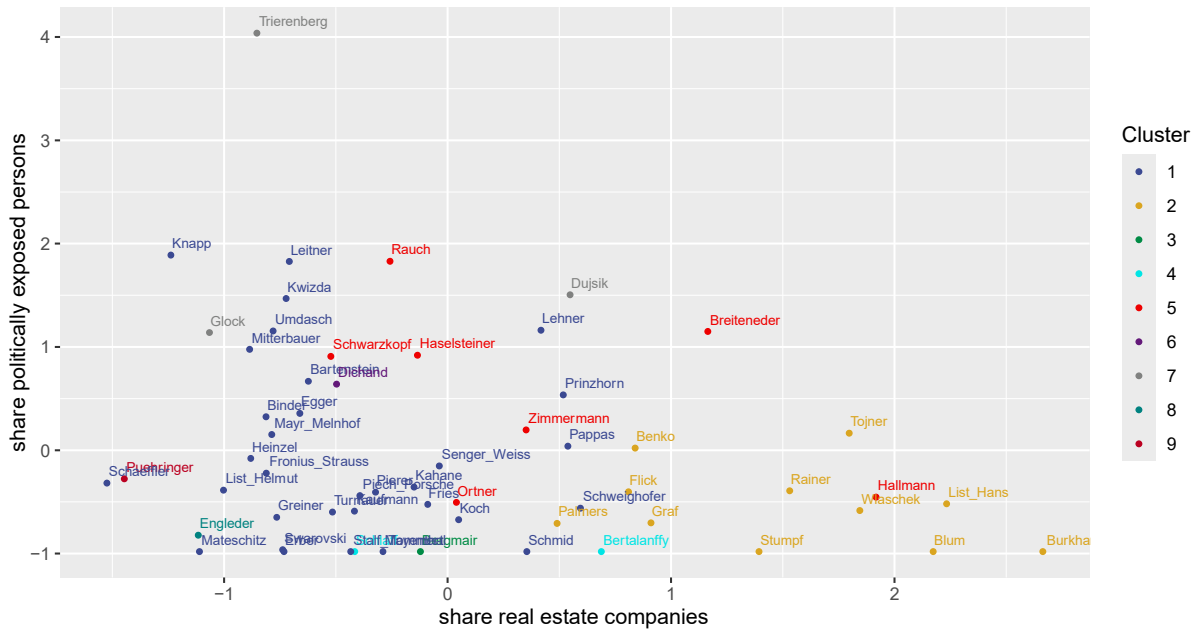


Figure 2. Cluster scatterplot displaying the correlation between the variables ‘share of real estate companies’ and ‘share of politically exposed persons’ (scaled values).

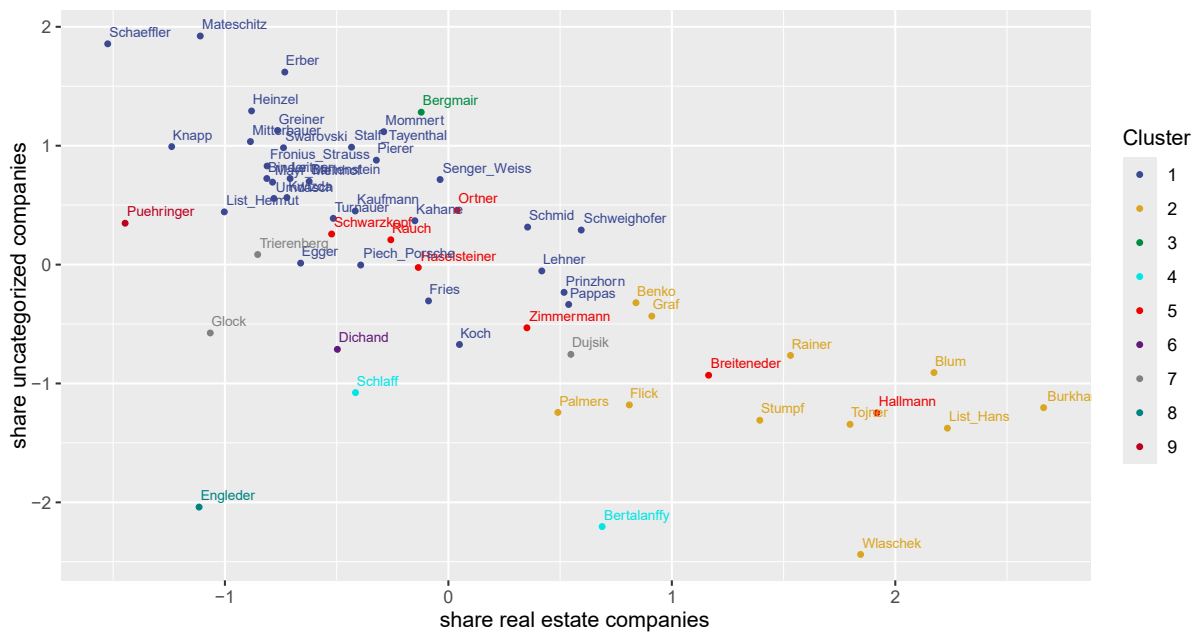


Figure 3. Cluster scatterplot displaying the correlation between the variables ‘share of real estate companies’ and ‘share of uncategorized companies’ (scaled values).

Industrial’ vs. ‘Discrete’ mode of wealth accumulation

Figure 4 and Figure 5 show two examples that are representative for the major ‘industrial’ cluster. The networks of the Mayr-Melnhof family (Figure 4) and of Martin Bartenstein (Figure 5). Although the former is much bigger and more densely connected in its center, both have a

high number of PEP-persons, who also represent core connections within the networks (high levels of degree and betweenness centrality). While the political proximity of the Mayr-Melnhof family is rather indirect and can be derived from party donations for the Austrian conservative party (ÖVP), Martin Bartenstein was Austrian Minister of Economics and is thus a PEP-person himself.

In contrast to this, Figure 6 to 8 show examples that are representative for a more ‘discrete’ mode of wealth accumulation: the real estate networks of René Benko (Figure 6), Bettina Breiteneder (Figure 7) and Michael Tojner (Figure 8) which are characterized by high shares of real estate companies.

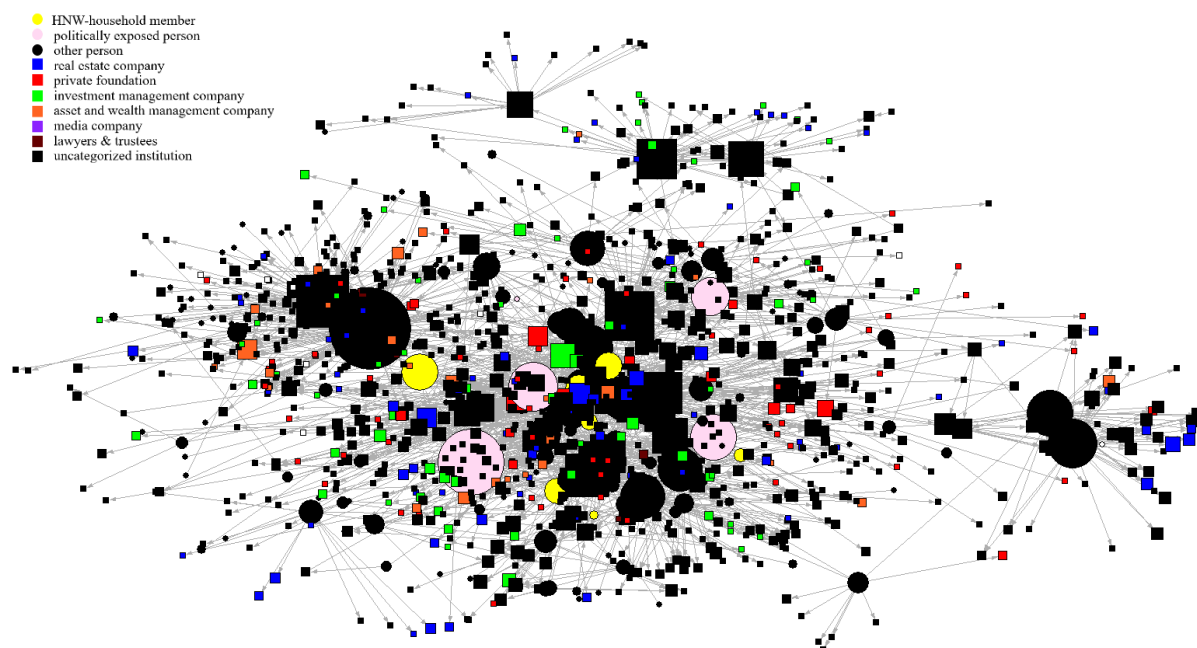


Figure 4. Network structure of Mayr-Melnhof and family (12th position in the superrich-sample)

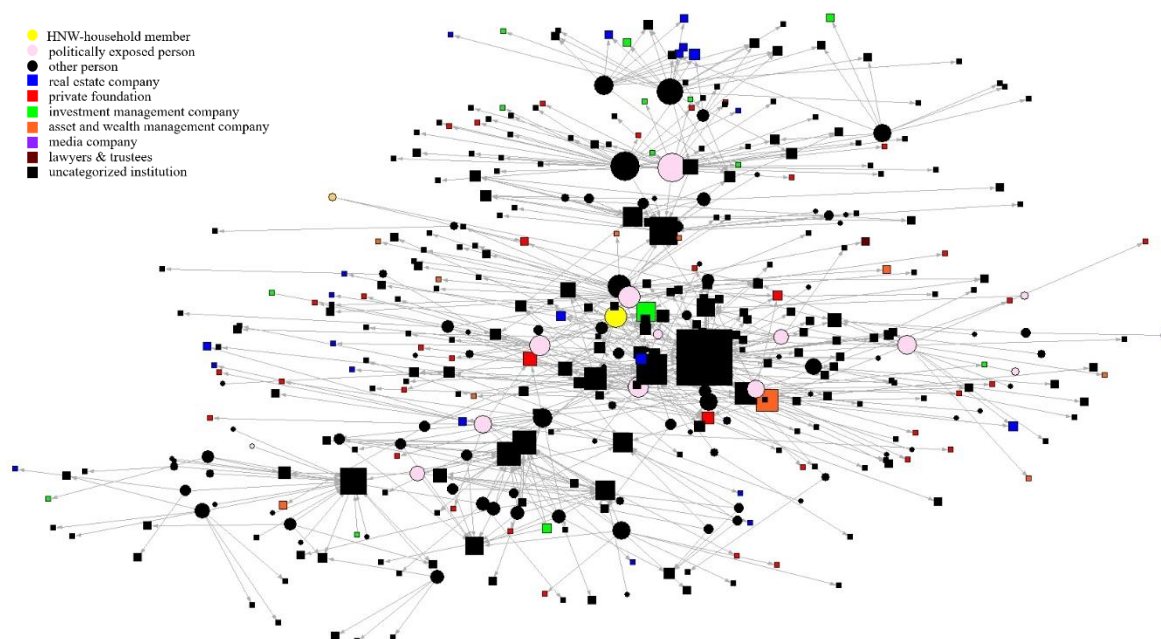


Figure 5. Network structure of Martin Bartenstein and family (36th position in the superrich-sample).

These companies are often connected via different forms of interlocking directorates, such as agents, strawmen and administrators. A very illustrative example of an agent within an HNW-household is the long-term CFO of the Signa Prime company, Manuel Pirolt. Pirolt, who also has one of the highest betweenness centralities in our sample, is the central node within the HNW-network of René Benko, who was the 6th richest HNW family in the Trend superrich-list in 2022 (the biggest black node in the center in Figure 6)¹⁵.

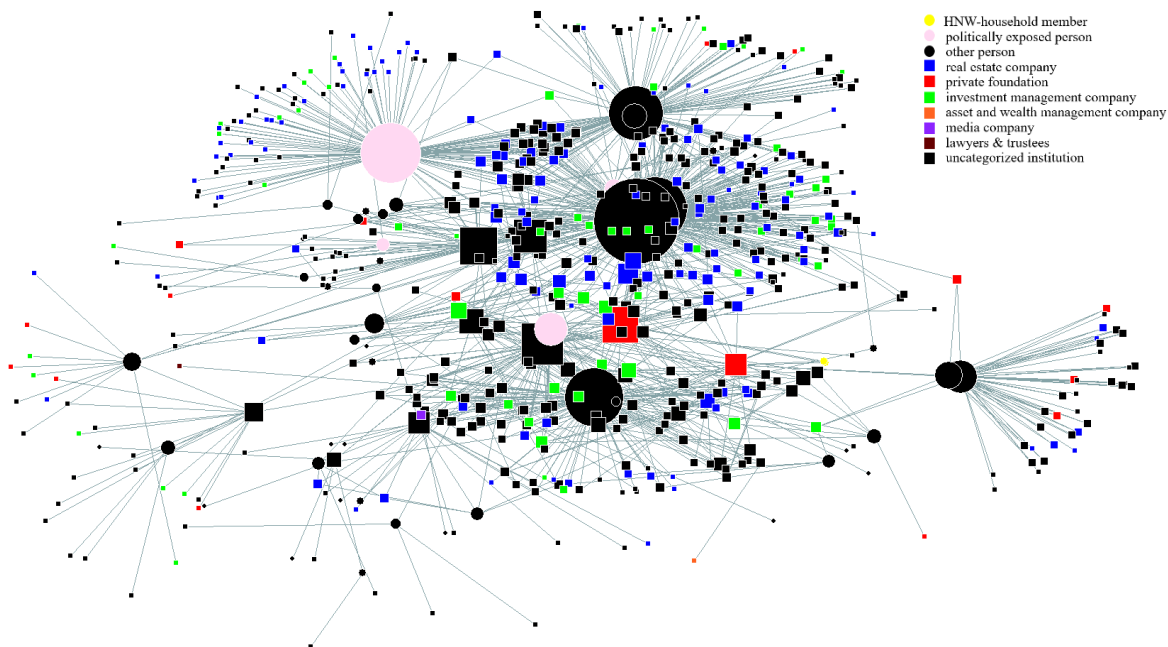


Figure 6. Network structure of René Benko and family (6th position in the superrich sample).

Besides his numerous positions in real estate companies within the Benko-network (among them for instance 30 companies entitled *Signa Prime...*), he is also an executive board member of the ‘Laura Privatstiftung’, one of the two core private foundations in which the wealth of the Benko family is stored. The Benko-network, however, is a typical example of a highly intransparent superrich-network in the real estate sector. While René Benko himself is only a very small node in his own network (degree centrality of 2, both in the two central private foundations where he is listed as the founder), there are five agents among the 15 individuals with a degree centrality greater than 100 (see Table 1 above). A high share of their corporate positions can be assigned to various small real estate projects, with nested connections within each other and to other similar real estate projects. The business model of Signa was to repeatedly establish small interconnected real estate companies (265 in our sample) with limited liability (GmbH). This potentially offers the possibility to offset profits and losses. In a similar vein, two other examples of HNW-household networks engaged in the real estate sector, show this typical pattern of nested small real estate companies (blue nodes) centered around core agents. However, in both the Breiteneder and Tojner families, the original family members of the HNW-households play a much more central role than in the Benko-network. In addition, both networks include a great number of private foundations, which often appear to serve to hold and store the wealth of various branches within the family or among the circles of HNW-

¹⁵ Due to a series of court proceedings and lawsuits against René Benko and the entire, rather opaquely structured Signa Group, many illegal business practices became apparent. The many insolvency proceedings surrounding the collapse of the Benko network have since occupied the Austrian and German judiciary on many levels. Benko will therefore no longer appear in the 2024 list of the Austrian superrich.

households.

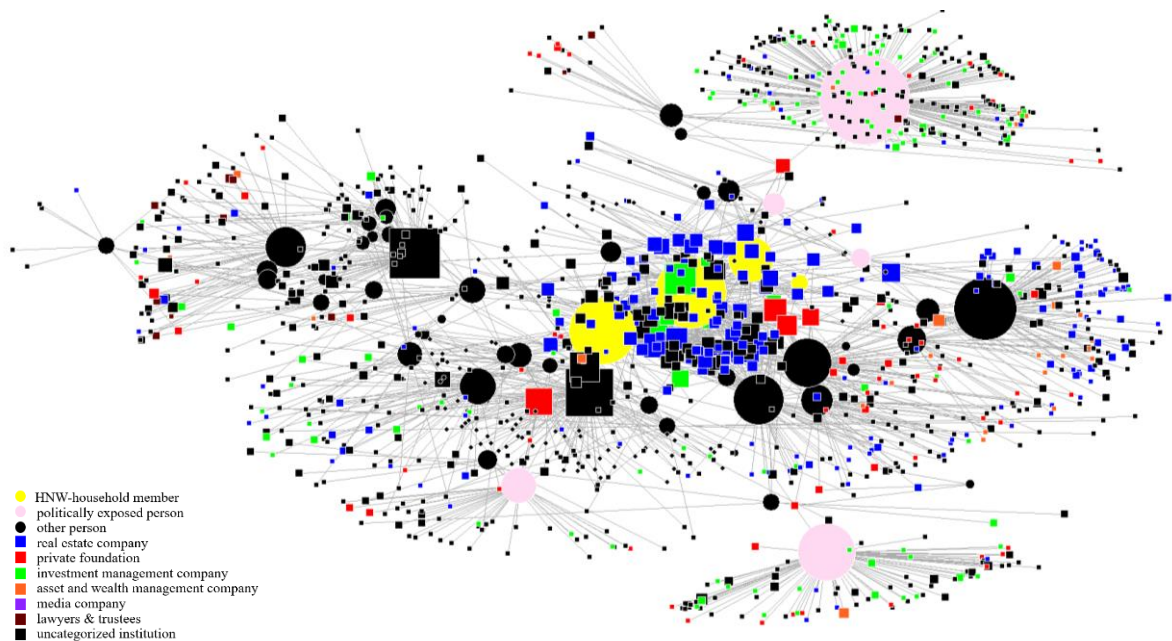


Figure 7: Network structure of Bettina Breiteneder and family (29th position in the superrich-sample).

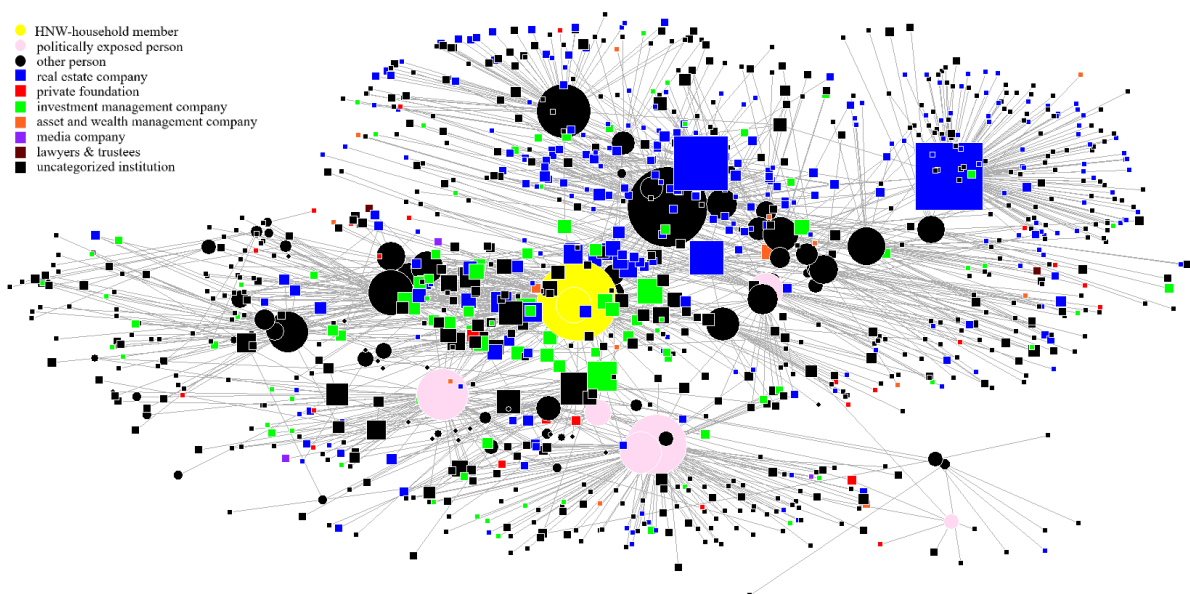


Figure 8: Network structure of Michael Tojner (13th position in the superrich-sample)

The significant role of various types of real estate companies in the wealth concentration within HNW-household is evident. Real estate companies, whether as standalone limited liability companies (GmbH), investment GmbHs, or holding companies, play crucial roles in many HNW-household networks. It appears that wealth is frequently parked in real estate projects or further increases through them.

5.2. Idiosyncrasies of the superrich in Austria

In the following section some idiosyncrasies of the superrich are discussed. They include both general characteristics as well as special outliers within our sample of HNW households. Each of these individual characteristics, but especially in their entirety, demonstrate that the asset structure and institutional network of HNW-households fundamentally differ from those of other economic actors in many respects. This distinction extends to the numerous arenas of political and social influence, as well as to legal forms that are almost exclusively utilized by the superrich.

5.2.1. Nested network structures as structural feature

In a first network analysis of each separate HNW-household in our sample we found in many instances extensive corporate structures composed of numerous small limited liability companies (GmbHs). These structures seem to exploit all available legal and tax-related strategies, including the creation of ‘special purpose entities’ and ‘investment management GmbHs’. This approach arguably leverages the advantages of various legal forms, originally intended to protect small business owners from liability risks, and scales them to a large construct. This practice is particularly prevalent in the real estate sector, where we often identified the practice to establish 5-10 GmbHs for a single project, each with limited liability. Additionally, these GmbHs often bear similar, fictitious names and are mostly via interlocking directorates interconnected in a manner that significantly obscures the traceability of control rights and ownership structures.

The example of Benko has already demonstrated how complex legal structures can be used to create and hold (often fictitious) value, simultaneously generating systemic risk for public finance. Presently, multiple criminal proceedings are in progress concerning the business model of Benko and the Signa Group, which could possibly have involved several illegal practices of corruption and fraud. However, the nested structure of real estate-networks provides systemic risks even if it operates within the legal framework of corporate law.

5.2.2. Media companies

Another arena of the societal impact of HNW-households is their active engagement in media companies, either directly by funding or owning media companies or by indirectly exerting control via investment management companies associated with media companies. While in the latter case direct control over broadcasting or publication lines is arguably quite rare, the precarious financial situation of many media outlets can lead to dependencies on their owners, thereby indirectly influencing reporting on issues such as extreme wealth concentration. In the former case, especially one HNW-households stands out. The HNW-network of the Dichand-family connects 234 media companies (gold squares in Figure 9) of different sizes on a local, regional and national level, which strongly supports the critique against the high concentration of the Austrian media. In addition to the large number of media companies, the Dichand-family also exhibits a substantial proportion of private foundations both at the core and on the periphery of its network, as well as a significant presence of PEPs. This supports the argument for a close relationship between the political and media sectors.

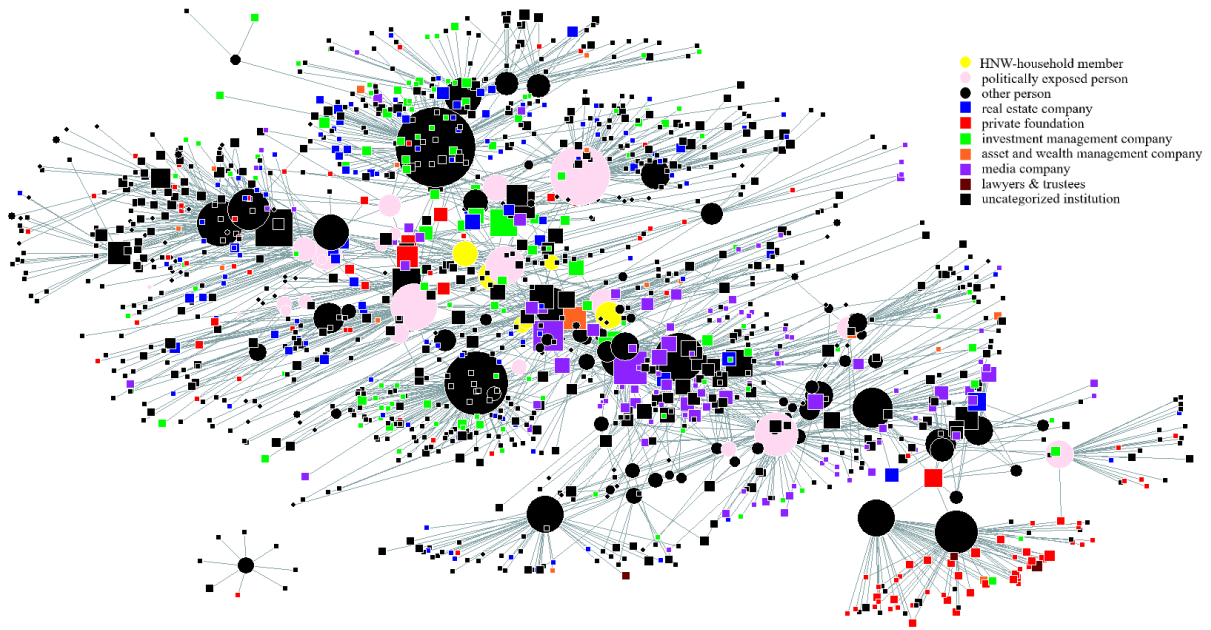


Figure 7. Network structure of Dichand family (51st position in the superrich-sample).

5.2.3. Private foundations

Another idiosyncrasy of Austrian HNW-households, resulting from our SNA is the substantial prevalence of private foundations. The Private Foundation Association reports that approximately 3,000 private foundations exist in Austria, of which 1,389 are included in our sample of the 62 wealthiest Austrian HNW networks (Stiftungsverband n.d.). This indicates that nearly half of all private foundations in Austria are associated with the uppermost segment of the wealth distribution. Figure 10 to Figure 12 illustrate this pattern, highlighting HNW-households with a high proportion of private foundations (indicated by red squares) within their networks. Such networks are typically observed among HNW-households whose wealth originates from significant inheritances or financial sector activities. High shares are in many cases correlated with higher shares of lawyers and trustees (see Figure 20 in the appendix). In

comparison to real estate networks, private foundation networks tend to be smaller and less densely connected.

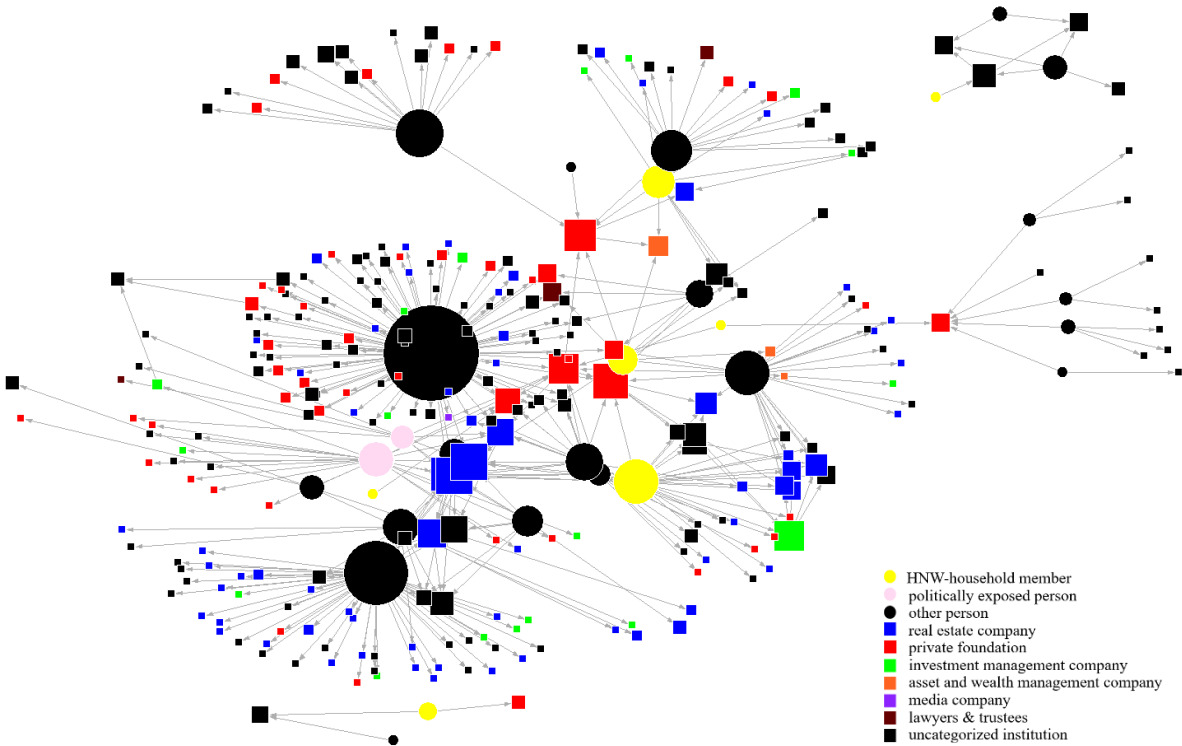


Figure 10: Network structure of Wlaschek family (4th position in the superrich-sample)

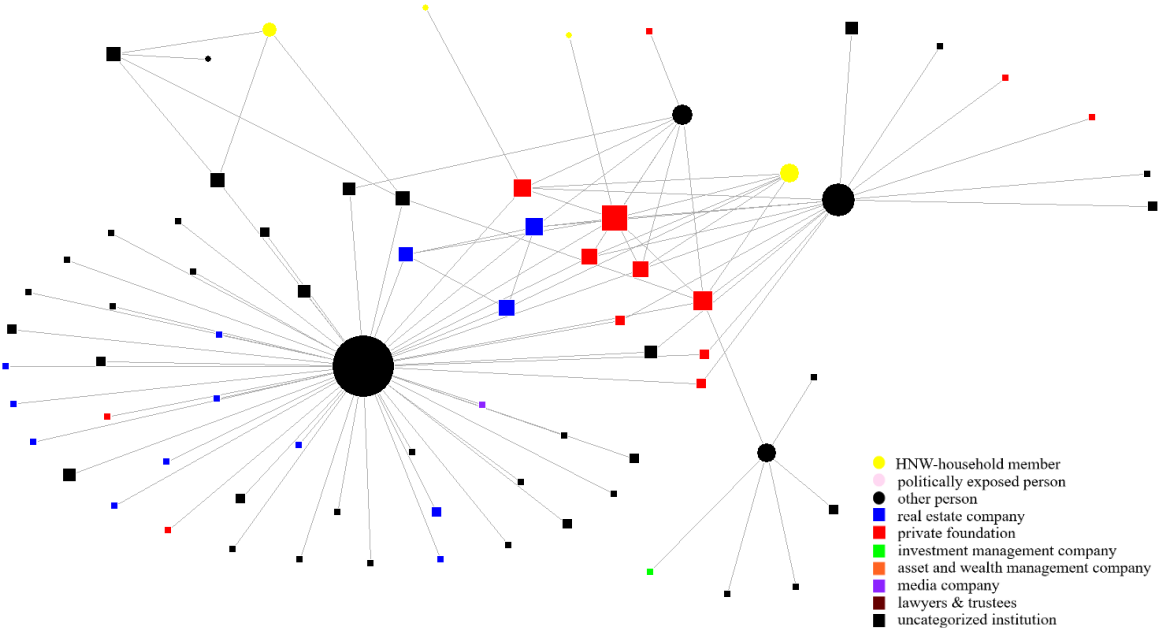


Figure 11: Network structure of Peter Bertalanffy and family (57th position in the superrich-sample)

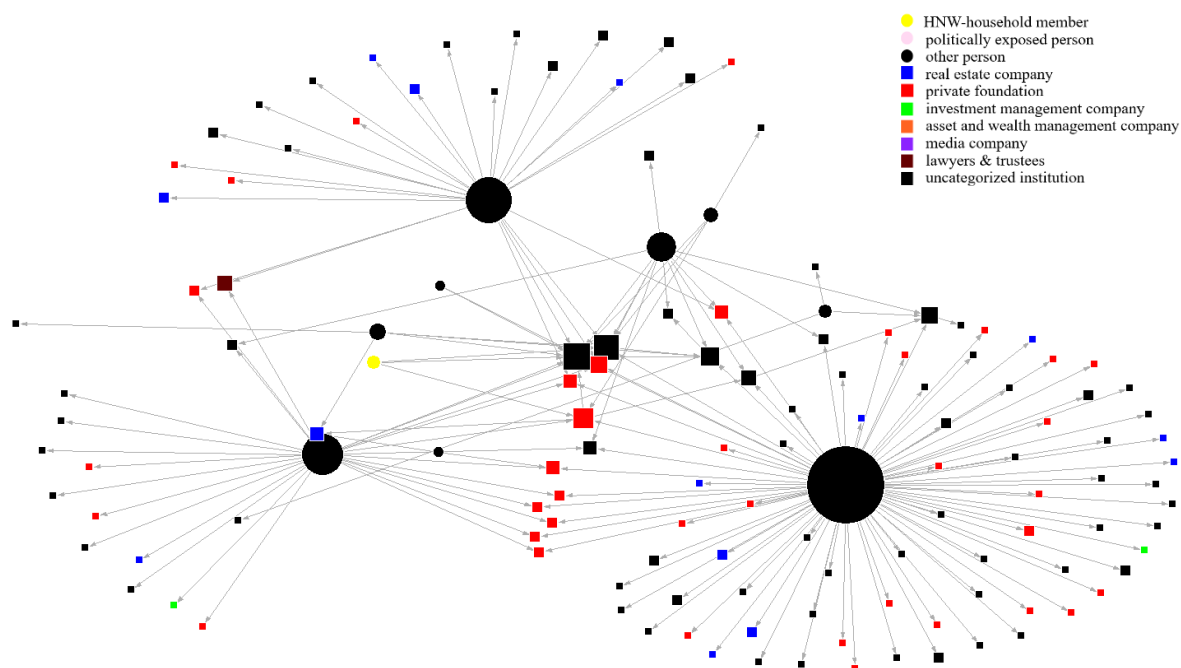


Figure 12: Network structure of Martin Schlaff (16th position in the superrich-sample)

Since the strategic management of extreme wealth often involves instruments such as private foundations, it seems fruitful to understand the logic and historical development of this legal form. These entities have become increasingly significant in managing large inheritances and ensuring family wealth continuity across generations. In Austria, before the enactment of the Private Foundation Act (PSG) in 1993, the establishment of private benefit family foundations was significantly limited (Kormann 2017). The PSG marked a pivotal change, greatly simplifying the creation of these foundations. Since their legalization, private foundations have gained prominence in wealth management. They serve as vital vehicles for asset protection, succession planning, and, importantly, in ensuring the cohesive transfer of assets to subsequent generations. This role has become critical even with the diminished tax advantages following the abolishment of inheritance taxes in 2008 (Ferdinand 2011). Despite this, the role of private foundations has continued to expand, highlighting their importance beyond mere tax benefits. Today, private foundations hold direct or indirect stakes in over 10,000 companies registered in the corporate index in Austria. These foundations often have stakes in significant family-owned or privately managed companies, which outnumber those owned by any other legal entities. Therefore, private foundations are a cornerstone in the architecture of wealth management for Austria's affluent families and the Austrian Economy.

Foundations in Austria legally need to have a board of directors comprising at least three individuals (Oesterle 2007). These board members, such as lawyers and accountants, are often legal and financial experts. This explains the correlation between high shares of lawyers and private foundations in our sample of HNW-households. Their expertise is pivotal to strategically managing and preserving the foundations' assets. Publicly, the visibility of these board members underscores the governance transparency of the foundations. However, it also offers a window into the interlaced relationships of Austria's wealthiest individuals, revealing a network subject to scrutiny and analysis for its significant influence on wealth and asset management. Analyzing these board members and the firms they are affiliated with is crucial for achieving an in-depth understanding of how the wealthiest people in Austria structure their fortunes. By often managing multiple private foundations, law and accounting firms but also individual wealth lawyers can be essential intersections of numerous financial and familial ties,

thus providing a unique vantage point for analyzing wealth concentration. Their role is multifaceted. While they undoubtedly contribute to prudent wealth management, they also navigate the complex and sometimes controversial realm of tax planning. We found several examples of people acting as ‘administrators’ of HNW-networks, by serving as board members in a great number of private foundations, the highest number of board memberships in private foundations in our sample is 49. The multiple positions of ‘wealth administrators’ undoubtedly offer various synergies to effectively use private foundations' legal leeway. Through this lens, their influence extends into the broader narrative of wealth management and the economic footprint of Austria's wealthiest families.

5.2.4. Political proximity

The examples of HNW-household networks presented so far already point towards another idiosyncrasy of the superrich: the central role, PEPs play in their networks. In all three examples of real estate-networks as well as in the special case of the Dichand network outlined above, political proximity seems to play an important role. In general, the results of the cluster analysis demonstrate that only two out of the nine clusters have no links to PEPs at all (cluster #3 and #4 in Figure 16 which, however, comprise only 3 HNW-households) while cluster #7 exhibits an exceptional high share of PEP connectivity. This is evidenced by the high degree of centrality and often also central position of PEPs in the networks as shown in Figure 13 (Trierenberg family; paper industry) and in Figure 14 (Franz Rauch and family; beverage industry) which display the networks of households with strong but different industrial backgrounds. Examples of PEPs in the HNW-household networks of superrich include managers with links to state-owned enterprises but also more explicitly former Federal Chancellors, Ministers of Finance and Economics and heads of departments in Austrian Ministries.

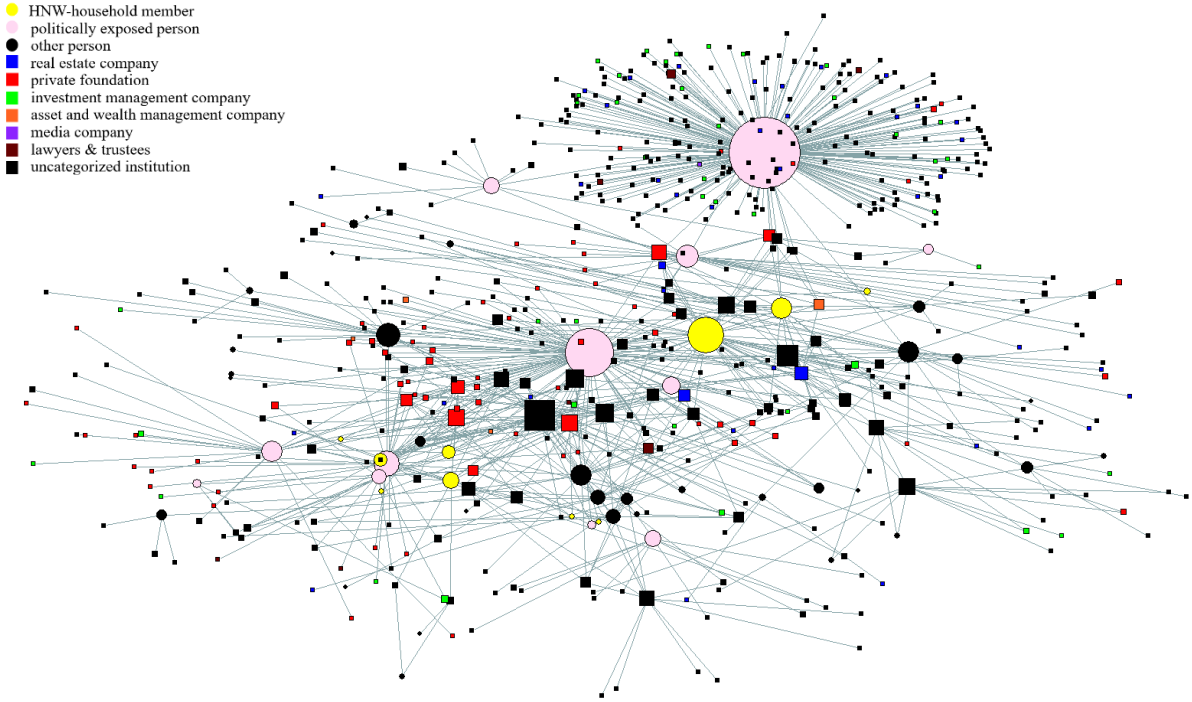


Figure 13. Network structure of the Trierenberg family (46th position in the superrich-sample).

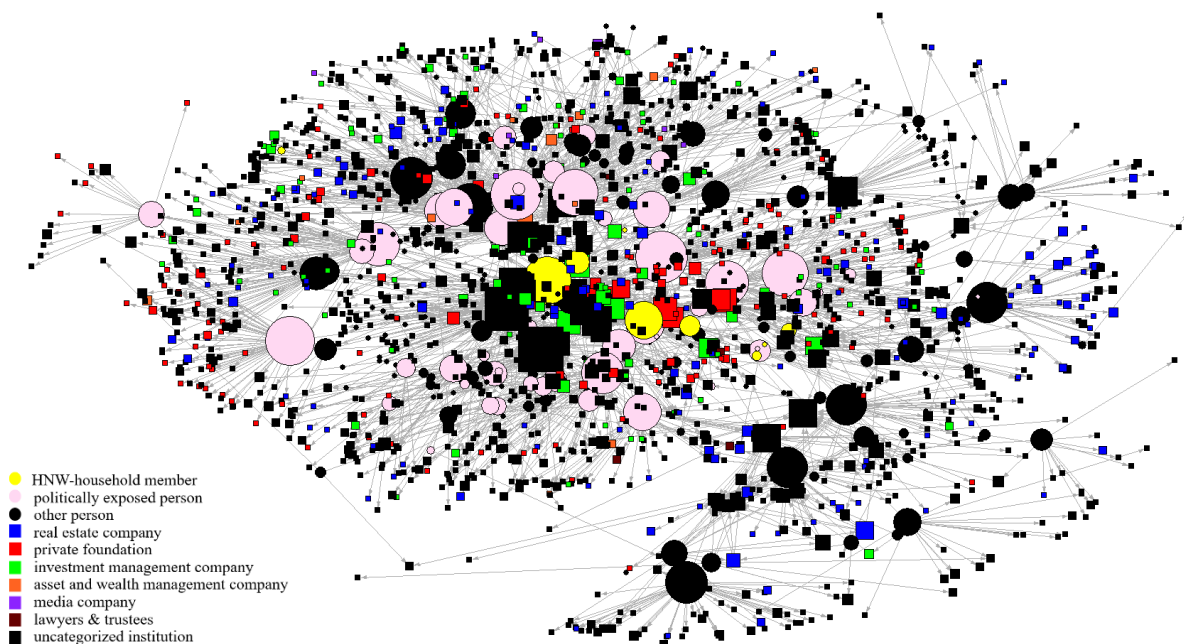


Figure 14. Network structure of Rauch Franz & family (23rd position in the superrich-sample).

While there have been many examples of instances where HNW-households seek to exert direct political influence through party donations or the financial support of ideological advocacy think tanks (in Austria particularly the neoliberal think tank ‘Agenda Austria’), it is a common pattern for PEPs to emerge as critical nodes in HNW networks. In these contexts, their political connections and networks appear to be valuable to HNW-households engaged in different industries, such as the paper and wood industry, the construction industry or the textile industry. Numerous studies have highlighted the close entanglements between politicians and business and industrial elites (e.g. Luechinger and Moser 2020; McGann 2016), identifying practices such as golden handshakes and revolving door effects as consequences of the financial interests of politicians, which often lie beyond the scope of anti-corruption measures. Although the close connections of PEPs in our sample of HNW-households do not directly suggest political influence in favor of the interests of the superrich, their prevalence nevertheless indicates a consistent pattern of wealth concentration.

6. Conclusion

The increasing concentration of income and wealth on the national and international level is crucial given the increasing societal challenges associated with it (e.g. socio-economic impacts of wealth inequality, carbon inequality). In this context, we identify a research gap in the literature on the superrich: Most studies either focus on quantitative inequality research (‘macro-level’) or on qualitative ethnographical (case) studies on socioeconomic elites (‘micro-level’) while the ‘meso-level’ regarding HNW-households receives less attention. There are hardly any comprehensive studies on the interconnections and networks of HNW individuals and families. With this network analysis of structural patterns within the networks of HNW-households in Austria, we thus contribute to the ongoing debate on the political economy of wealth concentration and highlight typical patterns of connections as well as several idiosyncrasies of HNW-household networks. Wealth concentration among the top 1% of the wealth distribution is particularly high in Austria compared to other OECD countries. Despite various challenges in adjusting wealth distribution for the ‘superrich’, our sample offers a heterogeneous and illustrative example of different patterns of wealth biographies in Austria. The total wealth of the 62 wealthiest high-net-worth households in Austria amounts to

approximately 40% of the country's annual GDP. Given this relationality, a deeper understanding of the structural dimensions of networks among the superrich and the institutional dynamics of wealth concentration and accumulation is crucial for revealing the blind spots in the political economy of the superrich in Austria. While data availability and quality are always an important issue in inequality studies, our network approach allows us to unveil several idiosyncrasies of the superrich:

First, the sample of HNW-households is male-dominated, with about 7.5 times more male than female individuals listed in the superrich-list. Second, both the level of HNW-households as well as on the overall level of the superrich-network in Austria highlight densely connected nested company structures. By using different legal forms of small limited companies ('GmbH'), holding and participation companies, real estate corporations and private foundations, wealth and company ownership structures often remain opaque, which opens a potential door for tax evasion. This is particularly true for private foundations. As one tax advisor puts it in an article on the advantages of private foundations in the Austrian Business Magazine *Trend*, the private foundation enables companies 'to keep their financial affairs confidential and to conduct their business activities discreetly.' (Wichmann, n.d.) Third, the real estate sector seems to be of core importance for holding and further accumulating wealth ('discrete' mode of accumulation). While the share of real estate companies differs across clusters of HNW-households, almost all HNW-networks comprise a substantial share of real estate companies.

Fourth, in contrast to a 'discrete' mode of wealth accumulation, the largest cluster in our analysis in particular, confirms the persistence of a strong 'industrial complex' where wealth accumulation takes place. This cluster consists of HNW-households from a variety of industries (e.g. automotive, machinery, construction, agriculture, forestry, pulp and paper, etc...), which furthermore tend to have stronger connections to PEPs. Fifth, our network analysis allows us to identify typical areas of connection within and between HNW-networks. On the one hand strategic partnerships (e.g. 'Speedinvest'), wealth management companies, and think tanks. On the other hand, we identified typical central nodes within and between HNW-households: agents, strawmen, and administrators.

It is particularly the latter case, that points to an increasing societal challenge which we finally want to emphasize in our conclusion: the increasing incompatibility of unfettered wealth accumulation with the functioning of democracy and democratic institutions. In this respect it is not only the still widespread use of quite opaque and non-transparent legal forms around private foundations and nested holding and real estate companies, which allow HNW-households to potentially hide their wealth. In many cases, the central position of politically exposed persons within and between HNW-household networks indicates the existence of revolving door effects (e.g. (Luechinger and Moser 2020; McGann 2016) as a direct form of political impact. Hence, in our sample of HNW-household we found former Federal Chancellors, former Ministers, Head of Departments in Ministries and Members of the Austrian Parliament. Even more, our network analysis of HNW-households has shown several recent examples of direct funding of political parties by superrich but also HNW-household several connections of HNW-households to media corporations.

The archetypical example in this respect is the media corporation network of the Dichand family, a very illustrative example of the concentration of media companies, which was also raised in previous studies (Grisold and Grabner 2017). Yet although there is no evidence of a direct influence on the reporting of these newspapers, in the long run, newspaper managers will have to pay attention to the newspaper's financial situation. Eventually, we also found mutual relations of HNW-household networks and neoliberal think tanks in Austria. Since influencing public opinion and political decision-making is one of the main aims of successful think tanks, linkages and gaining financial support for neoliberal think tanks provide an opportunity for HNW-households to impact on public debates, e.g. on the issue of wealth concentration and its societal implications. Against this background, it is quite telling that among the financial

support group ('Förderkreis') of the Agenda Austria, the most prominent and well-connected Austrian neoliberal think tank (see e.g. (Pühringer and Stelzer-Orthofer 2016; Schlögl and Plehwe 2015), there are numerous individual and corporate donors, who also appear in our sample of HNW-household networks. Unsurprisingly, private foundations are another important fraction of their financial support group.

In all, our network analysis unveils structural patterns of wealth concentration of Austrian HNW-households and highlights various idiosyncrasies in the political economy of the superrich in Austria. While several corruption scandals in the last years have shown illegal practices of gaining political influence and tax fraud, most of the nested corporate network structures within and between HNW-households are within the Austrian legal framework. Yet, given the uneven power balances between specialized wealth-managing law firms, individual 'administrators' of the wealth of HNW-households on the one hand and tax administration and financial market supervision authorities, the lack of transparency within complex corporate structures serves the self-declared interest of discrete wealth management. In other words, the legal framework of Austrian corporate law is supporting wealth accumulation of a very small fraction of HNW-households (Pistor 2021).

Against this background, the network analysis in this paper could also be of high political and societal relevance. García and Mateos (2021) have shown that the Spanish Tax Agency uses SNA tools to locate communities that are a potential tax risk. Therefore, it collects tax data of natural persons, their family networks and corporate networks associated with them. To overcome the lack of data on individual wealth, the agency estimates the net worth of taxpayers as it has access to data declared by the taxpayer. Furthermore, they draw from expertise from tax and accounting experts, big data analysts and data scientists. While our network analysis is not based on tax data, our approach similarly allows to unveil typical patterns within and between HNW-households in Austria, which the Austrian Tax Authority could also use.

7. References

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8. Appendix

Table 2. Data sample (the wealthiest Austrians for the year 2022 based on the Trend ranking, (Trend.at 2023)).

Rank	HNW individual/family	main source of wealth (sector)	Net wealth (bn EUR)
1	Porsche & Piëch family	Volkswagen Group (automotive)	41.6
2	Mateschitz, Dietrich* [†]	Red Bull GmbH (beverages)	24.9
3	Schaeffler, Elisabeth & Georg*	Schaeffler AG, Continental AG (automotive supplier)	6.4
4	Wlaschek family	Heirs of K. Wlaschek (Billa retail chain)	5.4
5	Stumpf, Georg*	Real estate, Industrial holdings	5.0
6	Benko, René*	Signa Holding (real estate)	4.9
7	Graf, Johann	Novomatic Group (gambling industry)	4.8
8	Flick, Ingrid & family	Heir of K.F. Flick (diverse industries)	4.0
(9)	Sohmen, Helmut & family	BW Group (shipping company)	3.9
10	Lehner family	Alpla Group (plastics & packaging)	3.8
11	Swarovski family	Glass, crystal optics & abrasives industry	3.7
12	Mayr-Melnhof, Franz & family	Paper, cardboard & packaging, forest estate and wood industry	3.5
13	Tojner, Michael	Montana Tech Components AG (diverse industries), WertInvest (real estate)	3.2
(14)	Geiger, Reinhold	L'Occitane Groupe SA (cosmetics)	3.1
15	Blum, Herbert, Gerhard & families	Julius Blum GmbH (metal fittings)	3.0
16	Schlaff, Martin	Diverse financial investments	2.9
17	Haselsteiner, Hans P. & family	Strabag SE (building industry), shareholdings, real estate	2.7
18	Binder, Franz, Reinhard, Matteo	Binderholz GmbH (wood industry)	2.6
19	Kahane family	Jungbunzlauer Holding AG (biotechnology), Bank Gutmann	2.5
20	Egger, Michael & Fritz	Egger Group (wood industry, beverages)	2.5
21	Greiner, Peter & family	Greiner Group (plastics & packaging)	2.2
22	Glock, Gaston[†] & family	Glock GmbH (firearms)	2.1
23	Rauch, Franz & family	Beverages, shareholdings	2.0
24	Schmid family	Schmid Industrieholding GmbH (building materials industry)	2.0
25	Kaufmann, Michael, Christian, Andreas	Heirs of H. Hartmann (paper industry)	1.9
26	Leitner, Wolfgang & family	Andritz AG (plant construction)	1.9
27	Prinzhorn, Thomas & family	Prinzhorn Holding (paper & packaging industry)	1.9
28	Heinzel, Alfred & Familie	Heinzel Holding (paper industry), large-scale agriculture	1.8
29	Breiteneder, Bettina & family	Real estate	1.8
30	Engleder & Neumann families*	Engel Group (machine construction)	1.7
31	Schwarzkopf family	Plansee Group (metallurgical industry)	1.7
32	Pappas, Catharina & Alexander	Pappas Group (automotive trade)	1.7
33	Pierer, Stefan	Pierer Mobility (motorcycles), shareholdings	1.6
34	Hallmann, Klemens	Real estate, film production, shareholdings	1.5
35	Bergmair, Bernd	MindGeek (porn industry)	1.4
36	Bartenstein, Martin	Bartenstein Holding (diverse industries)	1.3
37	Mommert, Ulrich	Assets from sale of ZKW Lighting (automotive industry)	1.3
38	Palmer, Christian & family	Financial assets, real estate, sale of Woolford AG (textile industry)	1.3
39	Turnauer, Stanislaus & family	Constantia Industrieholding (diverse industries)	1.3
40	Dujšik, H., C. Höfer, M. Totta	Heirs of H. Dujšik (real estate)	1.3
41	Erber, Erich	Assets from sale of Erber Group, SAN Group (biotechnology)	1.2
42	Burkhard, Ernst & Lemberger, Gabriela	Rainer Group (real estate, automotive trade, film industry)	1.2
43	Schweighofer family	HS Timber Group (wood industry), real estate	1.2
44	Umdasch, Hilde & family	Umdasch Group (diverse industries)	1.2
45	Senger-Weiss family	Gebrüder Weiss GmbH (logistics)	1.1
46	Trierenberg family	Assets from sale of Tann Papier (paper industry), delfortgroup (paper industry)	1.1
47	Fries, Rudolf & family	diverse shareholdings, assets from sale of Böhler-Uddeholm (steel industry)	1.0
48	Koch, Frederike, Herbert & family	Assets from diverse sales, real estate	1.0
49	List, Hans C.	Real estate	1.0
50	Knapp, Herbert & family	Knapp AG (logistics)	1.0
51	Dichand family	Kronen Zeitung (newspaper), Art collection	0.9
52	Kwizda, Johann F., Richard Peter & family	Kwizda Holding (pharmaceutical industry)	0.9
53	Mitterbauer, Peter & family	Miba AG (automotive, energy industry)	0.9
54	Ortner, Klaus & family	IGO Industries (diverse industries)	0.9
(55)	Bernecker family	Assets from sale of Bernecker+Rainer (automation technology)	0.8
56	Rainer, Josef	Assets from sale of Bernecker+Rainer (automation technology)	0.8
57	Bertalanffy, Peter & family	Assets from sale of Ebewe Pharma (pharmaceutical industry), real estate	0.8
58	Stalf, Valentin & Tayenthal, Maximilian	N26 (bank)	0.8
59	Fronius, Klaus, Strauss, Brigitte &	Fronius International GmbH (electrical/electronics industry)	0.8

	family		
60	List , Helmut	AVL List GmbH (automotive supplier)	0.8
61	Pühringer , Peter	Diverse financial investments, real estate	0.7
62	Zimmermann , Norbert & family	Berndorf AG (metal processing industry), Schoeller-Bleckmann Oilfield Equipment (oil industry)	0.7

*At the time of writing this paper, some of the persons listed in this Table have passed away (denoted with †). Furthermore, the flagship company of HNW individual #6 (**Benko**, René), Signa Holding has slipped into insolvency. HNW-households denoted with an asterisk (*) were part of the conceptual pretest which means that not all data is available in these cases (see below). Households whose ranks are in brackets are not included in the network analysis due to lack of data availability.*

Table 3. Search terms used to categorize the institutions and companies in den WiCo dataset.

Category	Search terms
Private foundation (Privatstiftung)	stiftung
Real Estate (Immobilien)	immo, equity, real estate, liegenschaft, gasse, straÙe, strasse, ebäude, arage, hotel, haus, projekt, lanung, erwertung, ealität, veranlagung
Investment management companies (Beteiligungsverwaltungsgesellschaft)	beteiligung
Asset management companies (Vermögensverwaltungsgesellschaft)	vermögens, vermögen
Media companies	medien, kurier, ie presse, krone, verlags, verlag, media, print, zeitung
Lawyers & trustees	rechtsanw
Uncategorized institutions	Rest

The search terms include also Upper/Lower case variations. After applying this search procedure, we manually checked particular categories (such as real estate) in order to avoid false-positive matchings (e.g. the term 'haus' occurs in many other instances such as 'Lagerhaus', which is part of an agricultural cooperatives system in Austria)

Table 4. Descriptives and summary statistics of the final data sample that entered our SNA.

HNW-household	No. of edges	No. of nodes	Share past positions	Share PEP (-connect.)	Out-degree 95 th percentile	Out-degree max. value	Investment managem. companies	Asset & wealth m. companies	Private foundations	Real estate companies	Lawyers & trustees	Media companies	Un-categorized
Bartenstein Martin	1376	1013	0,56	0,23	42	180	0,05	0,02	0,06	0,08	0,00	0,00	0,77
Benko René	1259	662	na	0,14	37	236	0,10	0	0,02	0,21	0,00	0,00	0,65
Bergmair Bernd	233	223	0,19	0	224	224	0,02	0,00	0,01	0,12	0	0	0,84
Bertalanffy Peter & Fam.	107	73	0,44	0	52	52	0,01	0	0,36	0,20	0	0,01	0,43
Breiteneder Bettina & Fam.	1941	1347	0,44	0,29	39	263	0,08	0,02	0,07	0,24	0,01	0	0,58
Brüder Binder	285	210	0,24	0,18	27	53	0,09	0,00	0,05	0,06	0	0	0,78
Dichand Fam.	2106	1497	0,50	0,22	38	142	0,09	0,01	0,07	0,09	0,00	0,11	0,61
Dujsik H, C Höfer, M Totta	223	172	0,72	0,34	49	49	0,05	0,01	0,13	0,18	0,01	0	0,60
Egger Fritz & Michael	1319	897	0,39	0,18	32	215	0,09	0,02	0,12	0,08	0,00	0,00	0,69
Engleder Fam.	138	73	na	0,02	5	14	0,33	0,07	0,07	0,04	0	0	0,45
Erber Erich	185	121	0,66	0	25	46	0,03	0	0,02	0,07	0	0	0,88
Burkhard Ernst & Lemberger Gabriela	323	86	0,41	0	53	58	0,07	0	0	0,37	0	0,01	0,55
Blum Fam.	314	200	0,26	0	21	92	0,02	0,00	0,07	0,33	0	0	0,58
Haselsteiner Fam.	3228	2140	0,44	0,26	53	289	0,09	0,01	0,07	0,127	0,00	0,00	0,69
Kahane Fam.	1017	737	0,42	0,086	28	105	0,04	0,01	0,08	0,12	0,01	0	0,73
Lehner Fam.	354	249	0,02	0,29	13	29	0,05	0,00	0,08	0,17	0,00	0,01	0,68
Schmid Fam.	744	559	0,31	0	16	90	0,06	0,00	0,01	0,17	0	0	0,73
Schwarzkopf Fam.	2374	1588	0,45	0,26	44	95	0,07	0,01	0,11	0,09	0,00	0,00	0,72
Swarovski Fam.	1634	724	0,21	0,00	12	76	0,10	0,00	0,01	0,07	0	0,00	0,81
Piech Ferdinand & Porsche Fam.	2290	1745	0,49	0,07	28	118	0,06	0,00	0,12	0,10	0,01	0,00	0,69
Fries Fam.	1390	768	0,35	0,06	33	75	0,10	0,01	0,10	0,13	0,00	0,00	0,65
Fronius Klaus & Strauss Brigitte & Fam.	1739	1382	0,55	0,10	35	477	0,05	0,02	0,06	0,06	0,00	0,00	0,79
Glock Gaston & Fam.	172	114	0,31	0,29	22	29	0,07	0	0,25	0,04	0,01	0	0,62
Greiner Peter & Fam.	1736	1214	0,32	0,05	33	104	0,04	0,01	0,06	0,07	0,00	0,00	0,82
Hallmann Klemens	3573	2231	0,44	0,07	70	237	0,08	0,01	0,06	0,31	0,00	0,00	0,54
Heinzel Alfred & Fam.	946	658	0,35	0,12	20	65	0,05	0,00	0,04	0,06	0	0,00	0,84
Ingrid Flick & Fam.	227	147	0,25	0,08	17	18	0,11	0,02	0,09	0,21	0,01	0	0,55
Graf Johann	551	455	0,47	0,04	40	153	0,06	0,01	0,05	0,22	0,01	0,00	0,64
Kaufmann Heirs	1211	761	0,31	0,05	39	81	0,06	0,02	0,07	0,10	0,006	0,01	0,74
Knapp Herbert & Fam.	394	295	0,45	0,39	29	57	0,07	0,02	0,08	0,03	0	0	0,81
Koch Frederike, Herbert & Fam.	1017	587	0,35	0,04	42	64	0,14	0,04	0,07	0,14	0	0,00	0,61
Kwizda Johann F, Richard P & Fam.	1462	1190	0,48	0,34	36	185	0,05	0,01	0,10	0,07	0,00	0,00	0,76
Leitner Wolfgang & Fam.	1478	1190	0,52	0,38	25	163	0,05	0,02	0,07	0,07	0,01	0,00	0,78

HNW-household	No. of edges	No. of nodes	Share past positions	Share PEP (-connect.)	Out-degree 95 th percentile	Out-degree max. value	Investment managem. companies	Asset & wealth m. companies	Private foundations	Real estate companies	Lawyers & trustees	Media companies	Un-categorized
List Hans C.	978	694	0,37	0,06	46	154	0,08	0,01	0,02	0,33	0,00	0,00	0,53
List Helmut	908	779	0,54	0,08	29	117	0,07	0,01	0,11	0,05	0,00	0,00	0,74
Martin Schlaff	183	135	0,53	0	86	86	0,01	0	0,31	0,10	0,02	0	0,56
Mateschitz Dietrich	626	466	na	0	4	100	0,02	0	0	0,04	0	0,02	0,92
Mayr-Melnhof Fam.	1880	1217	0,40	0,16	36	163	0,05	0,03	0,07	0,07	0,00	0,00	0,77
Michael Tojner	1673	1118	0,46	0,16	48	158	0,13	0,01	0,02	0,29	0,00	0,00	0,53
Mitterbauer, Peter & Fam.	1006	747	0,47	0,27	28	94	0,08	0,00	0,05	0,06	0,00	0	0,81
Mommert Ulrich	73	60	0,27	0	9	10	0,03	0	0,03	0,11	0,01	0	0,82
Ortner Klaus & Fam.	4592	2923	0,51	0,07	28	476	0,06	0,00	0,02	0,14	0,00	0,00	0,74
Palmers Christian & Fam.	694	425	0,62	0,04	44	214	0,09	0,01	0,15	0,18	0,01	0,00	0,54
Pappas Catharina & Alexander	858	591	0,60	0,14	34	152	0,09	0,01	0,05	0,18	0,01	0	0,65
Pierer Stefan	1294	824	0,45	0,08	29	90	0,06	0,01	0,02	0,11	0,00	0,00	0,79
Pühringer Peter	145	118	0,26	0,10	5	14	0,01	0,11	0,14	0,01	0,01	0	0,73
Rainer Josef	1177	829	0,46	0,08	28	174	0,06	0,01	0,04	0,27	0,00	0,01	0,60
Rauch Franz & Fam.	3283	2321	0,45	0,39	40	179	0,07	0,01	0,09	0,11	0,00	0,00	0,71
Schaeffler Elisabeth & Georg	11	13	na	0,09	1	1	0,09	0	0	0	0	0	0,91
Schweighofer Fam.	399	240	0,43	0,06	41	59	0,03	0,00	0,05	0,19	0,00	0	0,72
Senger-Weiss Fam.	1645	1145	0,28	0,11	16	179	0,03	0,00	0,04	0,13	0,00	0,00	0,77
Stalf Valentin & Tayenthal M	31	26	0,68	0	21	21	0,06	0,03	0	0,10	0	0	0,81
Stumpf, Georg	282	182	na	0	39	63	0,06	0	0,15	0,26	0,00	0	0,54
Prinzhorn Thomas	933	752	0,63	0,21	25	200	0,07	0,01	0,06	0,18	0,01	0,00	0,66
Trierenberg Fam.	840	622	0,6	0,69	24	240	0,05	0,01	0,161	0,06	0,01	0,00	0,7
Turnauer Stanislaus & Fam.	458	342	0,29	0,05	22	45	0,10	0,01	0,07	0,09	0	0,00	0,74
Umdasch Hilde & Fam.	970	755	0,48	0,29	45	69	0,07	0,01	0,09	0,07	0,00	0,00	0,76
Wlaschek Fam.	532	303	0,37	0,05	31	134	0,04	0,01	0,21	0,30	0,01	0,00	0,40
Zimmermann Norbert & Fam.	2632	1662	0,46	0,16	47	201	0,07	0,03	0,09	0,17	0,00	0,00	0,63

The intra-family edge number is without duplicates (e.g. persons who have multiple links to a company are reduced to one link).

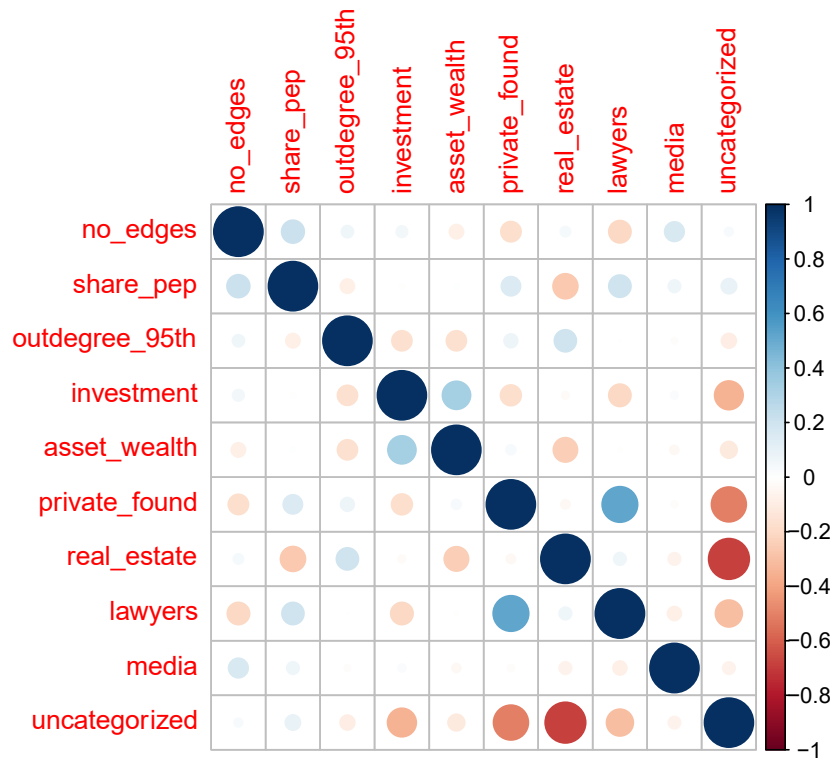


Figure 15. correlation matrix showing the correlation coefficient between the variables selected for the cluster analysis.

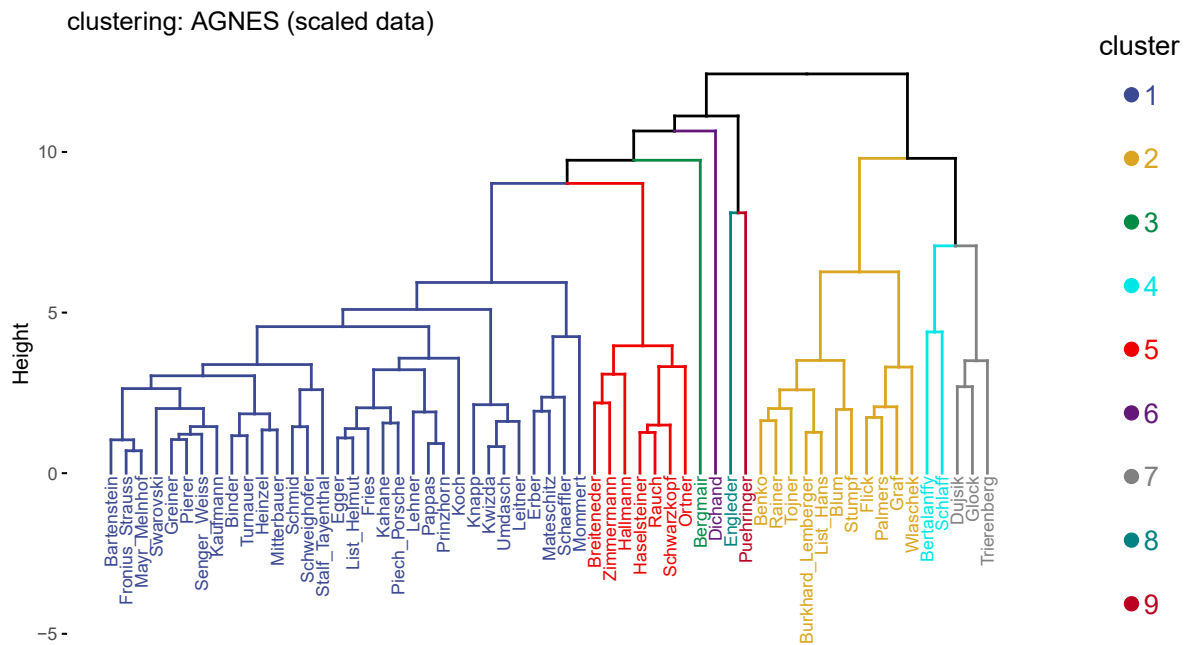


Figure 16. Dendrogram of the hierarchical cluster analysis based on the agglomerative nesting (AGNES) algorithm. The visualization shows the (group) similarities among the HNW households and the hierarchical relationships of the clusters.

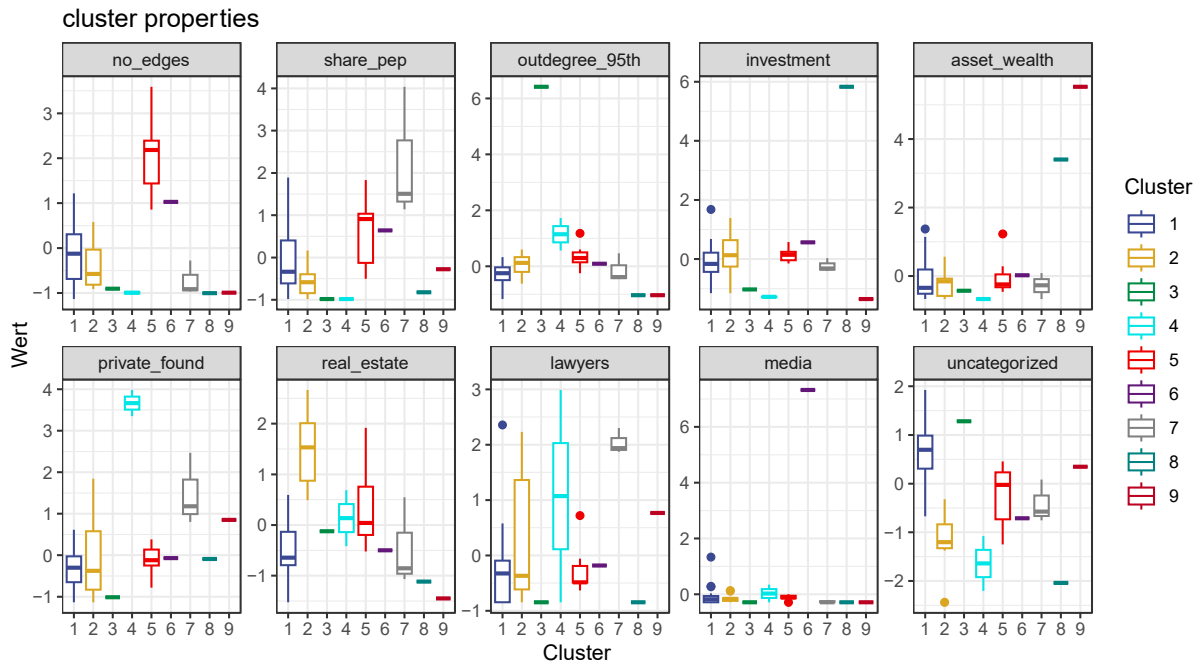


Figure 178. Boxplots of 10 variables selected from table 4 of each of the 9 clusters. The visualization shows the summary statistics for each variable within the clusters, highlighting differences and similarities among them. The horizontal that divides the box into two parts corresponds to the median, the lower and upper hinges correspond to the first and third quartiles. The upper (lower) whisker extends from the hinge to the largest (smallest) value no further than $1.5 * IQR$ (inter-quartile range, or distance between the first and third quartiles) from the hinge. Outlying points are plotted individually.

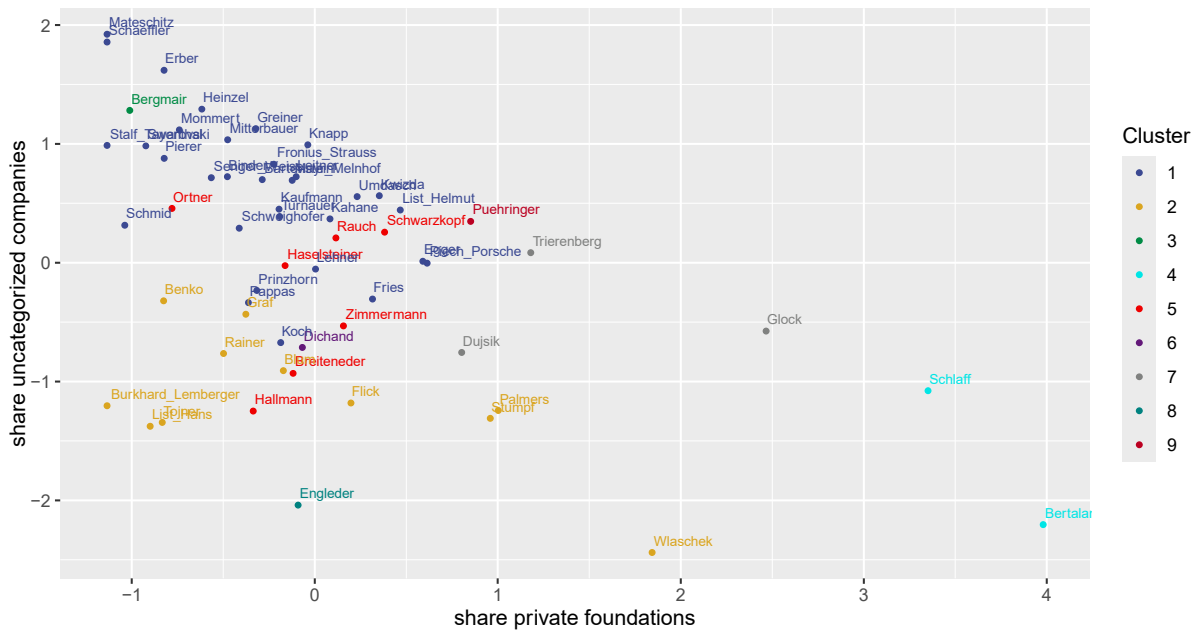


Figure 18. Cluster scatterplot displaying the correlation between the variables 'share of private foundations' and 'share of uncategorized companies' (scaled values).

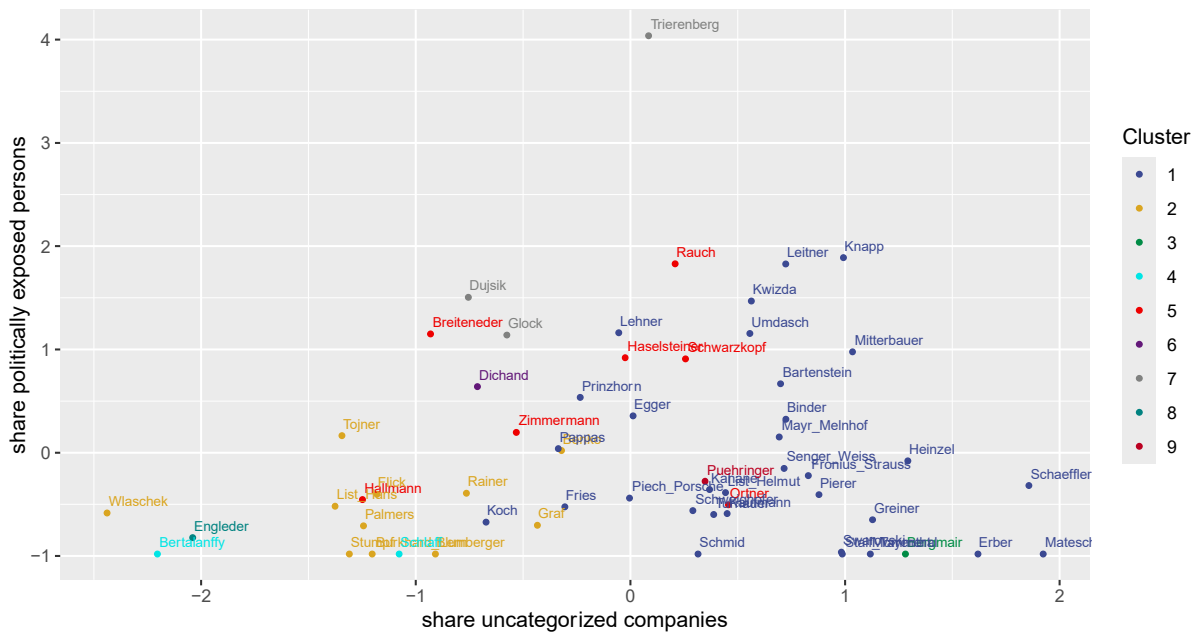


Figure 19. Cluster scatterplot displaying the correlation between the variables 'share of uncategorized companies' and 'share of politically exposed persons' (scaled values).

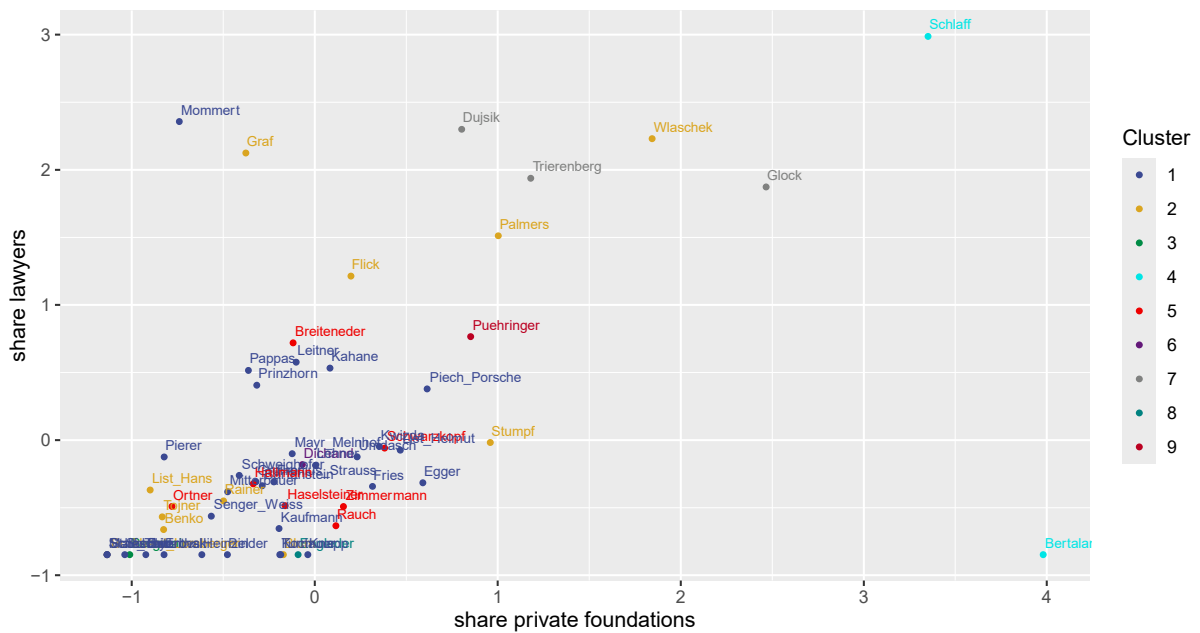


Figure 20. Cluster scatterplot displaying the correlation between the variables 'share of private foundations' and 'share of lawyers and trustees' (scaled values).

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