

OWNING THE WAVE

**EQUITY OWNERSHIP STRUCTURES AND OMX-STOCK
RETURNS DURING THE COVID-19 CRISIS**

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OWNING THE WAVE: Equity Ownership Structures and OMX-Stock Returns During the Covid-19 Crisis

Abstract:

This paper examines if Swedish equity ownership structures provided corporate immunity to the Covid-19 crisis. Our paper shows that it is the joint effect of ownership concentration and equity identity that is an important determinant of firm value during an economic crisis. We find a positive relationship between firm value and ownership concentration during the pandemic. Our paper provides further evidence that there is a negative marginal benefit of additional blockholder concentration in a firm, indicating that it is most valuable to have one large owner as opposed to several, dispersed owners. We provide a novel finding to the literature by showing that blockholder venture capital and private equity ownership concentration is positively related to firm value in a crisis. The paper finds additional support that firms with high concentration of insider and corporate ownership perform relatively better than hedge fund and institutional owned firms.

Keywords:

Equity ownership structures, blockholders, ownership concentration, equity identity

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I. Introduction

The Covid-19 induced financial crisis caused a substantial stock market shock, as demonstrated by the OMX Stockholm PI losing nearly 34% of its value between the 19th of February and the 23rd of March 2020. The Covid-19 pandemic distinguished itself from prior financial crises in several ways. As opposed to the financial crisis of 2008 - which underlying causes had been formed for years - the Covid-19 shock was purely exogenous in its origin and systematic to its nature in such a way that its effect was seen across all firms and industries. However, evidence shows not all firms were equally affected by the shock (Ding, Levine, Lin, and Xie, 2021). Economic severity of the crash differs inter- and intra-industry, giving rise to the question whether certain corporate characteristics provide immunity in times of crises.

One such corporate characteristic is that of equity ownership and its impact on firm performance and value. Studying ownership concentration, and more specifically that of blockholder¹ ownership concentration, is important as it allows us to examine what impact owners in control of a firm have on firm performance. Studies specifically examining ownership concentration against firm performance show a variation in result, where for example Baek, Kang, and Suh Park (2004), McConnell and Servaes (1990), and Morck, Nakamura, and Shivdasani (2000), find a positive relationship between ownership concentration and firm value, whilst a negative or non-existent relationship is found elsewhere, for example Holderness and Sheehan (1988) and Demsetz and Lehn (1985). The contradictory results have motivated researchers to not only focus on ownership concentration, but also the impact of varying ownership identities of equity holders, as different owners are hypothesized to exert different influence on the managers of the company based on different objectives of their ownership (Denis and McConnell (2003) and Aguilera and Crespi-Cladera (2016)). Morck, Shleifer and Vishny (1988) and McConnell and Servaes (1990) find that insider managerial ownership is nonlinearly related to firm value. Furthermore, studies such as McConnell and Servaes (1990), Pedersen and Thomsen (2000) and Lin and Fu (2017) find that institutional ownership is significantly positively related to firm performance.

However, the aforementioned studies are limited to only examining the impact of equity ownership structures over longer time horizons, giving rise to criticism regarding the validity of the result on the basis of an endogeneity and omitted variable problem (Himmelberg, Hubbard and Palia (1999) and Fabisik, Fahlenbrach, Stulz and Taillard (2021)). Baek et al

¹ A blockholder is an equity holder owning more than 5% of all outstanding shares.

(2004) argue that the endogeneity problem is largely mitigated when examining ownership structures during an economic crisis and holding pre-crisis ownership structure and firm characteristics fixed. The literature covering crises conclude contradictory results to those covering longer time-horizons. Ding et al (2020) argue that pre-Covid firm characteristics, such as equity ownership structures, yield corporate immunity so that some stocks perform better in an economic shock. They find that firms with an institutional ultimate owner and high levels of insider managerial ownership affect stock performance negatively. However, no literature covers the joint effect of both ownership concentration and equity identity. Additionally, the varying empirical conclusions highlight that no universal finding seems to hold for all countries and/or time-periods. La Porta, Lopez-De-Silanes, and Shleifer (1999) and Faccio and Lang (2002) find that equity structures in Europe differ significantly, as well as compared to the rest of the world. Furthermore, La Porta et al (1999) find that Swedish equity structures are characterized by a high degree of ownership concentration, dual-class shares and crossholdings, increasing the risk of, for example, shareholder expropriation (Holmén and Knopf (2004)). Sweden's rare equity structure and the exogenous and systematic nature of the Covid-19 shock provides an excellent possibility to study the effects of ownership concentration and identity on firm value.

Our study is delimited to Sweden during the Covid-19 crisis. As contribution to the literature, our paper is based on Baek et al (2004) who study equity ownership concentration during the '97-asian financial crisis in South Korea. Central to our extension is the depth and scope of data. Whereas Baek et al (2004) only study the blockholder ownership concentration of the largest, summed and insider blockholders (ignoring further separation of equity identities), we have been able to calculate blockholder ownership concentration data for both summed and largest insider, institutional, corporate, hedge fund and venture capital/private equity owners. As such we are not only able to determine how sum blockholder ownership affects returns in sum, but also how various equity ownership identities and their collective objectives affect firm value on their own. We specifically contribute to the literature by studying the joint effect of both ownership concentration and equity identity to derive its impact on firm performance.

Ownership data is collected for insiders (including for the CEO and chairman), venture capital/private equity firms, hedge funds, corporations and institutional investors. Individual/insider ownership includes managerial ownership as well as non-managerial ownership, which would include situations where former executives or wealthy individuals hold shares without investing through an asset management company investment vehicle.

Venture capital and private equity firms (VC/PE) are entities that purchase companies through special investment strategies, such as leveraged buyouts or recapitalizations, and are, like hedge-funds, often private and unregulated. Hedge funds are asset managers using “non-traditional” methods to achieve high returns and are as such unregulated and private. They typically employ aggressive quant-strategies to exploit trading opportunities. Corporate ownership includes both private and public companies that holds a stake in a target company. The ownership data on corporate ownership specifically excludes private investment firms and is reserved for strategic companies’ ownership. Institutional ownership is a summary variable covering a multitude of different ownership identities, including bank/investment banks, family offices/trust, foundation/endowment, insurance companies, pension funds, REITs and traditional money managers.

We find that increased ownership concentration of the largest blockholder leads to better stock performance during a financial crisis. As such, we find support for that the benefit derived from efficient monitoring exceeds the potential cost for expropriation, in the form of, for example, conflict-of-interest and strategic-alignment effects during the Covid-19 induced stock crash in Sweden. In terms of magnitude, the positive effect of the largest blockholder ownership concentration is slightly lower than that of Baek et al (2004). Furthermore, we also find that sum blockholder concentration ownership leads to better stock performance, albeit with a slightly lower coefficient. This result is contradictory to the findings of Baek et al (2004) where sum blockholder concentration ownership is more positively related to firm value than the largest blockholder concentration. As such, this finding supports the research of Earle, Kucsera, and Telegdy (2005), in that the marginal effect from increasing ownership concentration from new blockholders is a diminishing function and seems to be negative. This implies that a small proportion of large owners was preferred over a large proportion of small to medium sized owners during the pandemic.

Furthermore, our study provides evidence that having large owners in the form of insiders and corporations are positively associated with relatively higher returns during the Covid-19 crisis. This finding provides evidence of the convergence-of-interest effect dominating the entrenchment-effect for higher levels of insider managerial ownership (Baek et al (2004), Morck et al (1988), and McConnell and Servaes (1990)), and that a large corporate owner can provide, in addition to monitoring, crucial liquidity to the target firm in times of distress (Ding et al (2021)). In terms of magnitude, the positive effects related to having large insider ownership is about half of the effect recorded in the paper of Baek et al (2004). When examining the sum blockholder concentration for different investor identities, we again find

support that insider- and corporation ownership concentration is positively correlated with returns during the Covid-19 crisis.

In addition, our results provide a novel finding that is absent in the current literature. We observe that sum blockholder ownership concentration from venture capital and private equity firms is positively related to returns. The positive relationship is approximately equal to that of sum insider ownership concentration, suggesting that the market discounts the two ownership identities similarly. Finally, we are not able to determine which of ownership concentration or equity identity is most beneficial in the context of equity structures, suggesting that this could be a future research area.

II. Theoretical Background

The study aims to test whether a firm's pre-Covid equity ownership structure influenced stock returns during the Covid-19 shock. Pre-Covid characteristics are defined and gathered for the last quarter of 2019. In the following section, a description of the theoretical framework is discussed.

Differences in equity ownership structures both create and mitigate financial frictions which affect stock performance. The seminal paper that concretizes theories regarding financial frictions of equity ownership structures is that of Pound (1988), where three distinct effects of external ownership is presented. According to the efficient monitoring hypothesis, external ownership gives rise to benefits in the form of external monitoring of the firm's management, thus reducing potential principal-agency costs. The theories of conflict-of-interest and strategic-alignment refers to the negative externality of externally concentrated ownership, namely that external owners might find it beneficial to use their voting power in a way that maximizes their own total wealth at the cost of the firms. As the incentives for shareholder expropriation increases during economic distress (Lemmon & Lins (2003)), the effects of external monitoring, conflicting interest, and strategic-alignment are all expected to increase in strength during the pandemic. Furthermore, Morck et al (1988) builds upon established literature and concretizes two hypotheses regarding insider ownership, namely the convergence-of-interest hypothesis and the entrenchment hypothesis. The convergence-of-interest hypothesis predicts that firms with a high level of managerial ownership should perform relatively better than those with low managerial ownership, as the agency problem is mitigated due to incentive alignment. The entrenchment hypothesis predicts the opposite, namely that higher levels of insider management is associated with relatively lower firm value as badly incentive-aligned management could use their voting rights to entrench themselves. Again, as the incentives for shareholder expropriation increases during times of economic distress, we expect that the effects related to the convergence-of-interest and entrenchment should increase in magnitude during the Covid-19 shock.

The influence of equity ownership structure on stock returns is examined specifically in the context of the Swedish market. The existing literature covering Swedish equities is scarce, and there are several reasons for why studying Sweden would contribute to the literature. First, isolating a single country allows for examination of ownership structure on a level of detail that would be hard across multiple countries (Baek et al, 2004). Furthermore,

Faccio and Lang (2002) show that cross-country discrepancies exist within EU-countries regarding equity ownership structures. For example, Sweden has a smaller fraction of widely held firms compared to other countries and exhibit particularly concentrated ownership structures (that is, relatively few entities may control large portions of a firm). Therefore, when examining what impact controlling shareholders exhibit on a firm, Sweden is somewhat of a special case that allows meticulous analysis of ownership concentration effect specifically.

Additionally, our data set allows us to examine equity ownership structure and its forces differently than has been previously done. For example, rather than grouping together blockholder ownership into a single blockholder category, we have been able to gather ownership concentration data for multiple sub-groups such as insider, corporate and institutional ownership, including activist ownership, such as hedge funds and private equity/venture capital firms. As such, we study the joint effect of ownership concentration and equity identity so that we can precisely explain what drives stock performance.

III. Data

A. Firm data

To conduct the study, the initial firm universe consists of all stocks listed on the OMX Nordic Exchange Stockholm. Financial and utility firms are excluded from the sample, as is commonly done in the literature (e.g., Morck et al (1998), McConnell and Servaes, Fabisik et al (2021)) due to differences in accounting practices and exposure to volatile oil prices, thus rendering spurious results if included in the model. Most dual-class firms are removed from the sample, that is, firms with A and B shares, due to potential measurement bias error. The ultimate sample size is 338 firms (sum market capitalization is approximately $\frac{1}{2}$ trillion USD) which corresponds to some 90% of Swedish market capitalization as of the 31st of December 2019 (excluding financial and utility firms).

Table 1: Summary Statistics

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
Holding Period Returns	338	-35.9	15.4	-79.2	-46.0	-37.2	-26.9	30.0
Insider (%)	338	16.3	17.8	0.02	2.4	9.8	25.4	82.2
Institutional (%)	338	29.9	20.9	0.01	13.5	24.3	44.4	93.1
Investment Bank (%)	338	2.5	4.3	0.0	0.0	0.1	3.2	30.2
VC/PE (%)	338	7.0	13.0	0.0	0.0	0.0	10.3	70.2
Hedge Fund (%)	338	0.9	3.6	-8.2	0.0	0.0	0.004	25.3
AMC (%)	338	22.7	17.8	0.01	8.4	17.3	34.8	80.9
Corporation (%)	338	13.7	16.1	0	1.1	7.5	21.2	80
Strategic (%)	338	37.7	22.2	0.04	19.1	36.8	53.8	92.1
Activist (%)	338	0.3	2.0	-4.8	0.0	0.0	0.0	21.2
Largest Blockholder (%)	338	23.3	15.5	0.0	11.8	19.7	29.6	100.0
Sum Blockholder (%)	338	45.6	20.8	0.0	29.9	46.2	59.9	100.0
Largest Insider (%)	338	8.6	12.8	0	0	0	12.4	80
Largest Institution (%)	338	7.7	6.8	0	5.0	7.6	10.1	54
Largest Hedge Fund (%)	338	0.7	3.1	0	0	0	0	24
Largest Corporation (%)	338	10.8	15.5	0.0	0.0	6.0	16.2	100.0
Largest Activist (%)	338	0.2	1.6	0	0	0	0	21
Market Cap	338	1,647.1	5,071.8	1.6	20.3	78.6	609.3	46,627.7
Assets	338	1,451.5	4,612.4	0.5	10.5	48.6	503.2	56,181.1
Debt	338	442.3	1,475.2	0.0	0.5	8.0	164.2	16,948.6
Cash	338	95.9	480.9	0.0	2.1	5.8	32.5	6,579.1
Revenue	338	1,007.0	3,744.4	0.0	2.8	27.6	329.1	46,241.3
EBIT	338	109.1	397.4	-80	-2.6	1.5	37.0	4,844

Market Cap (Log)	338	4.8	2.3	0.5	3.0	4.4	6.4	10.7
ROA (%)	338	-15.5	41.2	-313.8	-27.9	2.5	8.1	39.3
Liquidity (%)	338	21.3	23.7	0.0	4.6	10.9	30.1	98.6
Leverage (%)	338	22.6	25.0	0.0	3.5	18.4	33.5	296.5

Note: Holding period returns denote returns between the 19th of February till the 23rd of March 2020. The total sample market capitalization covers 86.7% of Swedish market capitalization when excluding financial and utility firms. Ownership data denotes the percentage stake of outstanding shares for each equity identity group, collected from S&P Capital IQ. Blockholder ownership data is collected from S&P Capital IQ (for non-dual-class firms) and Bureau van Dijk Orbis (for dual-class firms). AMC stands for asset management company. All data calculated and denoted in USD and millions.

B. Ownership Data

As proxy for equity ownership in non-dual class firms, we calculate the percentage stake of shares outstanding over total shares outstanding for various ownership groups. Similar proxies for ownership are common in previous literature, for example Himmelberg (1999), McConnell and Servaes (1992), Thomsen and Pedersen (2000) and Fabisik et al (2021). The following formula is used, where i denotes the identity group of the owner:

$$\text{Equity Blockholder Ownership}_i(\%) = \frac{\# \text{ of Common Shares Owned}_i}{\# \text{ Total Common Shares Outstanding}}$$

To determine a firm's ownership structure, data is collected from the S&P Capital IQ database. Capital IQ provides data points for a variety of ownership groups based on cash flow rights. A complicating matter is that of dual-class firms. According to Holmen and Knopf (2004), Sweden rank first in the world in the use of dual-class firms. To mitigate measurement-bias error of dual-class share firms, most dual-class firms are removed from the sample to match voting rights with cash flow rights. However, as excluding dual-class firms means omitting large percentages of market capitalization (as some of the largest corporations in Sweden are dual-class), we manually calculate blockholder ownership stakes for the largest 32 dual class firms by using historical voting rights data from the Bureau van Dijk Orbis data set. This is explicitly to make sure the data sample represents a large enough part of the Swedish market. The final sample consists of 338 firms, where 306 firms are non-dual class, and 32 firms are dual-class.²

² Results are robust to the inclusion and non-inclusion of dual-class firms. Including dual-class firms makes sure our sample covers a representative stake of Swedish market capitalization (~90%), even though these firms are normally excluded in other literature.

To evaluate ownership concentration and its effect on stock performance, research is conducted on blockholder owners as those are seen as the controlling owners with influence on the firm (Baek et al (2004), Ding et al (2021)). As per definition, blockholders are those who own more than 5% of all outstanding shares.

Ownership data is calculated for the largest-, top 3-, top 5-, and sum-ownership of all blockholders. For example, the variable “largest blockholder” denotes the percentage ownership stake of the largest blockholder in the firm. As an extension to Baek et al (2004), we also calculate the percentage stake of the largest and sum blockholder ownership for each unique equity ownership group. That means our sample covers equity concentration data for blockholder insiders, institutions, corporations, hedge funds and venture capital/private equity firms. This allows us to better attribute blockholder benefits or disadvantages to aggregate investor characteristics and understand where frictions arise from.

C. Holding period return data

To measure the pandemic’s effect on stock performance, we use buy-and-hold returns (*holding period return/HPR*) for three periods that are significant for the crisis period. These periods are chosen to cover various periods of the Covid-19 shock to fully reflect the impact on stock return and firm value (Baek et al, 2004).

Two holding periods begin on the 19th of February 2020 (denoted as $T = 0$), during which the OMXSPI index closed at its all-time high ($PI = 732.67$). The longest holding periods ends on the 23rd of March 2020 ($t = 33$), which is when the OMXSPI index reached its lowest level during the shock ($PI = 478.95$), a market decline of -34.63%. The shortest period ends on the 24th of February ($t = 5$), the 5-day period during which the stock market experienced a sharp decline (-6.7%) before any upward rebound. The third holding period starts on the 4th of March and ends on the 23rd of March. This is to cover the largest single shock of the pandemic, which is when the OMXSPI plummeted 27.16% (*from* PI 657.52 *to* 478.95).

The holding periods are denoted HPR (0, 33), HPR (14, 33) and HPR (0, 5), respectively. To measure stock performance, we calculate the %-change in closing stock prices adjusted for dividends. The data is collected from the S&P Capital IQ database and the following formula is used, where i denotes the firm and t denotes time in days from $T = 0$. HPR (0, 33) is used for the main regressions, whilst HPR (14, 33) and HPR (0, 5) are used for robustness checks (see “*Robustness check*” section).

$$HPR(T, t)_i = \frac{\text{End of Period Value (div. adjusted)}_i - \text{Initial Value (div. adjusted)}_i}{\text{Initial Value (div. adjusted)}_i}$$

D. Control variables and industry dummies

To better examine the relative effects of equity ownership identity and concentration against holding period returns, numerous control factors are included in the model. The following financial data is collected from the S&P Capital IQ database.

Firm size: We argue that larger firms are likely to be less financially constrained, partly due to longer history of operation, profitability, larger cash-holdings, and a larger asset base to pose as a collateral. We measure firm size as the logarithm of pre-Covid market capitalization.

Firm performance: Profitable firms are less likely to suffer as severely during an economic shock as their current operations are profitable and generate positive cash flows. To measure pre-Covid profitability, we divide EBIT by total assets.

Leverage: Firms with higher leverage ratios should be more likely to suffer from financial distress in times of an economic crisis. To measure leverage, we divide total debt by total assets.

Liquidity: Firms with higher levels of liquidity should be less likely to need to seek external financing during times of distress and should have a better chance of surviving the crisis and maintaining profitability. We measure liquidity by dividing the firm's cash and cash equivalents over total assets.

Industry: Finally, industry effects are included in the model to control for differences in industry-specific exposure. The industries controlled for are industrials, consumer discretionary, consumer staples, IT, communication services, real estate, materials, energy and health care.

IV. Empirical Results and Analysis

A. Model design

The research model is based on cross-sectional analysis, where pre-Covid equity ownership structure and firm characteristics are measured and regressed against three holding period returns.

$$HPR_i = \beta_0 + \sum \beta_j \text{Blockholder Concentration}_i + f_c + f_{ind} + \varepsilon_i \quad (1)$$

$$HPR_i = \beta_0 + \sum \beta_j \text{Largest Blockholder Identity Concentration}_i + f_c + f_{ind} + \varepsilon_i \quad (2)$$

$$HPR_i = \beta_0 + \sum \beta_j \text{Sum Blockholder Identity Concentration}_i + f_c + f_{ind} + \varepsilon_i \quad (3)$$

The dependent variable, stock returns, are computed through holding period returns (“HPR”). Ownership concentration is calculated for all blockholders on aggregate, as well as taking into consideration the equity identity of the owner, ranging from institutional to individual and hedge fund ownership. Equation 1 regresses holding period returns against blockholder concentration. Equation 2 regresses holding period returns against the concentration of the largest blockholder for each equity identity. Equation 3 regresses holding period returns against sum blockholder concentration for each equity identity. In addition to the above variables, we control for firm and industry effects through control and dummy variables, respectively.

We aim to test several hypotheses. First, by comparing the largest blockholder concentration to different aggregates of sum blockholder ownership, we can better understand where the value of blockholder concentration is derived from. That is, is it better to have a single concentrated owner compared to dispersed ownership of several blockholders? Second, we aim to test what impact different equity identity groups have on stock performance. We hypothesize that large concentration of hedge fund ownership should be negatively correlated with ownership as aggressive quant-strategies are usually employed, which put downward pressure on stock prices. In contrast, we expect to identify patterns of a positive relationship between institutional ownership and stock performance due to institutional owners often being able to provide liquidity, which should dampen the downward movement of the stock.

The methodology is a replication of Baek et al (2004). By utilizing a cross-sectional analysis, the study and its results may suffer from corresponding disadvantages of such an approach. However, we have taken numerous steps to mitigate these. By nature, a cross-sectional analysis includes no time dimensionality, making causal inferences impossible. However, by measuring equity ownership structure and firm characteristics pre-Covid and regressing it against carefully selected holding period returns during an economic shock, we argue that the problem is mitigated. Furthermore, another disadvantage of the cross-sectional approach is that of reverse causality. In the context of our study, a central question is whether holding period returns are directly affected by equity ownership identities. However, following Baek et al (2004) reasoning, we argue that by focusing on a crisis period and holding pre-crisis equity ownership identity and characteristics fixed, we can mitigate the reverse causality problem. Finally, a cross-sectional study has the internal weakness of a potential omitted variable problem, where variables that have a joint influence on both the dependent and independent variables are not included and controlled for in the model, resulting in either an exaggerated or understated effect of the independent variables. However, by including control variables of firm characteristics that are motivated through economic rationale, for example as in Ding et al (2021), we argue that this problem is mitigated. The problem arising from omitted variables cannot be guaranteed to be completely absent from our model, but we argue that it is largely eliminated by the inclusion of carefully selected control variables.

Following Baek et al (2004), we perform two regressions for each variable; one where we control for both firm characteristics and industry effects, and one where we control for only industry effects through industry dummies. This is to test whether the coefficients change significantly depending on the inclusion of control variables.

B. Panel A Results: Equity Ownership by Blockholder Concentration

Panel A regresses various measures of ownership concentration against the holding period returns covering the full extent of the Covid-19 pandemic. In regressions (1) and (2), ownership concentration is proxied as the equity stake of the largest blockholder. Significant results are found, independent of whether we control for firm characteristics or not. If the largest blockholder in a firm increased its equity stake by 1%, the corresponding increase in stock performance during the shock would have been roughly 203 basis points (0.203%). The result is statistically significant on a 1% significance level.

Regressions (3) to (6) yield similar results, however now proxying ownership concentration as the sum blockholder ownership of the top three and fifth largest owners. Results, albeit with lower coefficients, indicate that the effect of ownership concentration is most prominent for relatively higher levels of ownership. Finally, in regressions (7) and (8), ownership concentration is proxied as the sum of all blockholder ownership. Here, a 1% increase in sum blockholder ownership led to, on average, 0.109% better returns. The result is significant on a 1% significance level. Panel A results indicate negative marginal benefit of ownership concentration on holding period returns.

Relative to Baek et al (2004), our findings substantiate the evidence of a positive relationship between ownership concentration and firm value during an economic shock. As such, we find evidence for the benefits of efficient monitoring dominating the costs of conflicting interest and strategic alignment when viewing ownership concentration as a homogenous group of investors. Interestingly, the magnitude of the positive effects is slightly lower in our sample, where the effect of the largest blockholder concentration is approximately 0.20% compared to Baek's 0.28%. Furthermore, where Baek identifies a stronger positive relationship between blockholder concentration and firm value as the number of blockholders increases, we find the opposite. As such, our result contrasts the findings of Baek et al (2004) and supports the findings of Earle et al (2005) in that different forms of concentration, either in the hands of one large majority holder or in the hands of multiple medium-size holders, have different implication on firm value. Where Baek finds a positive marginal benefit of additional blockholders, we find a negative marginal benefit. This finding suggests that the incentive for monitoring is proportional to the equity owned, implying that a small quantity of sufficiently large owners is preferred above a large quantity of smaller owners during a time of crisis.

Furthermore, our results add to the existing literature that covers ownership concentration and firm performance, but for longer time-horizons. In accordance with McConnell & Servaes (1990), Morck et al (2000), and Claessens and Djankov (1999), we find a strong positive relationship between ownership concentration and firm performance but find that this also holds for the Covid-19 shock.

C. Panel B Results: Equity Identity Ownership and Blockholder Concentration

Panel B examines the concentration of the largest blockholder owner, but now divided into several equity identities. In regressions (1) and (2), holding period returns are regressed against insider ownership concentration. The results indicate that higher concentration of insider blockholder ownership is contributing positively to holding period returns on a 10%

significance level, both when including and excluding firm specific control variables. In regressions (3) to (10), holding period returns are regressed against institutional, corporate, hedge fund and activist ownership. The results indicate that higher ownership concentration of these types of investor identities bear no statistical significance on holding period returns during the Covid-19 crisis. In regressions (11) and (12), holding period returns are regressed against all ownership groups at once. The results show that individual ownership still contributes positively to holding period returns, now with an increased significance level. Furthermore, the largest blockholder corporate ownership concentration is significantly positively related to holding period returns at the 10% level.

The results from the regression in Panel B entail some interesting observations. First, when separating ownership concentration based on equity identities, a low to non-existent relationship between holding period returns and ownership concentration is found. No investor identity, except for that of insider ownership, neither exerts a significantly positive or negative relationship with holding period returns, a finding that supports the view that the effect of efficient monitoring dominates the combined effect of conflict-of-interest and strategic alignment during a crisis. This being said, insider ownership shows significance at the 10% level supporting the findings of Morck, Shleifer, and Vishny (1988) and McConnell & Servaes (1990) in that the convergence-of-interest effect dominates the entrenchment effect for higher levels of insider ownership - or put differently - that high levels of insider ownership is positively associated with firm performance.

This result is however contradictory to some studies in the area, which have indicated that the entrenchment effect is amplified during times of crisis, for example Johnson, La Porta, Lopez-de-Silanes, and Shleifer (2000) and that for high levels of insider ownership, during a crisis, the entrenchment effect dominates the convergence-of-interest effect (Ding et al (2021)). We hypothesize that these differences in results can, in line with the findings of La Porta et al (2000), be due to between-country heterogeneity in corporate governance regulation.

The results from regressions (11) and (12) further reinforces the notion that insider ownership concentration is positively related to firm performance during a crisis. Additionally, regressions (11) and (12) unmask the heterogeneity found in the paper of Baek et al (2004) in regard to the positive coefficient of the largest non-insider blockholder variable. By dividing the largest non-insider blockholder category into sub-groups of identity we are able to infer that this positive relationship is driven by corporate blockholder ownership, implying that ownership concentration from either institutional or hedge fund entities exert no positive influence on firm value during the pandemic.

Finally, the positive relationship between corporate ownership concentration and firm value is in line with the findings of Ding et al (2021), motivated by the general strategic nature of their investment position and that large corporations can provide liquidity to their target firms during times of crisis.

D. Panel C results: Sum Ownership Concentration Identity

In Panel C, holding period returns are regressed against blockholder concentration measured as the sum ownership stake of all investors (divided into equity identities) holding at least five percent of the outstanding shares in the firm. In regressions (1) to (10), each ownership group is regressed separately against holding period returns, with no statistically significant results. In regressions (11) and (12), ownership concentration of all identities is regressed against HPR yielding significant results for insider, corporate and venture capital/private equity blockholder ownership, at the 10% and 5% significance level, respectively. The result is robust to the inclusion and exclusion of control variables.

The regression in Panel C provides evidence that ownership concentration of insider-, corporation-, and VC/PE-firm ownership concentration is significantly positively related to holding period returns. In relation to Baek et al (2004), we also identify a significant positive relationship between summed insider blockholder concentration and firm value, albeit at a smaller magnitude. Consequently, our findings show observable effects of the convergence-of-interest theory on Swedish stocks during the Covid-19 shock.

Furthermore, the positive relationship is somewhat contradictory to the claim of Johnson, Boone, Breach, and Friedman (2000) and Lemmon & Lins (2001) in that a crisis that generates weak economic prospects, manifested in a relatively lower expected return on investment, should increase controlling managers' incentive to expropriate minority shareholders to the detriment of firm value. This is not a pattern that we can observe in our data, due to insider blockholder concentration being significantly positively related to holding period returns. The discrepancy can however be explained in that we explicitly control for voting rights and only measure ownership in terms of cash-flow rights (Lemmons & Lins (2001)).

Furthermore, in line with Morck et al (1988) and McConnell & Servaes (1990), the result partially supports the curvilinear relationship between insider managerial ownership and firm value and that the convergence-of-interest effect dominates the entrenchment effect for higher levels of insider ownership. The significantly positive relationship between corporate ownership and HPR during the Covid-19 crisis supports the hypothesis that having large corporate owners can induce positive effects during a crisis in terms of the owners, in addition

to providing monitoring of the firm's management, also provide necessary liquidity in times of economic distress (Ding et al (2021)).

Finally, as the effect of venture capital and private equity firms on stock returns in times of crisis, to the best of our knowledge, has never been previously studied in this context, our study provides new evidence that having large VC/PE owners provides positive effects to firm value, supporting the notion that the monitoring benefits VC/PE firms provide outweighs the cost associated with conflict-of-interest and strategic-alignment. An article published in *Affärsvärlden* (2020) discusses how venture capital firms would work extra close with portfolio firms during the crisis to provide support. For example, Swedish venture capital firm Nordic Capital would have several video calls a week with all 40 portfolio firms, implementing strategies based on macroeconomic, sector and firm specific factors. In general, venture capital and private equity blockholder owned firms seem to have benefited from this type of interaction.

E. Discussion on ownership concentration vs. equity identity

A general question we ask ourselves is whether ownership concentration or equity identity is most important when explaining effects on stock performance. Based on the regression in Panel A, a 1% equity increase in the size of the largest blockholder concentration leads to 0.203% better stock performance when controlling for firm characteristics. We can then relate this to the results in Panel B, where a one percent increase in the largest insider and corporate blockholder yields, on average, a 0.131% and 0.099% increase in holding period returns during the Covid-19 crisis.

However, judging from the summary statistics, the effect of the largest blockholder against the largest insider- and corporate blockholder cannot be accurately compared. The mean ownership for the largest blockholder corresponds to 23.3% whilst the mean ownership for largest insider- and corporate blockholder corresponds to 8.6% and 10.8%, respectively. As it is widely accepted that an increase in the cash-flow rights for an investor increases the incentives for efficient-monitoring and maximizing firm value, it seems natural that the largest blockholder, independent of investor-type, should have a more significant impact on holding period returns.

Panel A: Equity Ownership by Blockholder Concentration

	<i>Dependent variable:</i>							
	HPR (0, 33)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Largest Blockholder Concentration	0.172*** (0.053)	0.203*** (0.054)						
Top 3 Blockholder Concentration			0.124*** (0.045)	0.144*** (0.046)				
Top 5 Blockholder Concentration					0.097** (0.041)	0.114*** (0.042)		
Summed Blockholder Concentration							0.094** (0.040)	0.109*** (0.041)
Firm Control Variables	No	Yes	No	Yes	No	Yes	No	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	338	338	338	338	338	338	338	338
R ²	0.108	0.125	0.100	0.114	0.094	0.108	0.094	0.107
F Statistic	4.958***	3.886***	4.547***	3.495***	4.286***	3.281***	4.275***	3.260***

Panel B: Ownership Concentration Identity Regression

	<i>Dependent variable:</i>									
	HPR (0, 33)									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(10)	(11)
Largest Insider Blockholder Concentration	0.109* (0.064)	0.109* (0.065)							0.131* (0.067)	0.136** (0.068)
Largest Institutional Blockholder Concentration			-0.034 (0.121)	-0.026 (0.122)					0.053 (0.126)	0.068 (0.127)
Largest Corporate Blockholder Concentration					0.066	0.074			0.088	0.099*

					(0.055)	(0.055)			(0.057)	(0.057)
Largest Hedge Fund Blockholder Concentration							-0.146	-0.134	-0.132	-0.112
							(0.267)	(0.269)	(0.266)	(0.268)
Firm Control Variables	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	338	338	338	338	338	338	338	338	338	338
R ²	0.087	0.096	0.079	0.088	0.083	0.093	0.080	0.089	0.094	0.105
F Statistic	3.921***	2.870***	3.540***	2.616***	3.725***	2.778***	3.570***	2.635***	3.093***	2.512***

Panel C: Equity Ownership by Blockholder Concentration (Hedge Funds and VC/PE Firms)

<i>Dependent variable:</i>												
HPR (0, 33)												
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Sum Insider Blockholder Concentration	0.065	0.061									0.095*	0.099*
	(0.047)	(0.048)									(0.052)	(0.053)
Sum Institutional Blockholder Concentration			-0.074	-0.059							0.002	0.028
			(0.064)	(0.065)							(0.072)	(0.073)
Sum Corporate Blockholder Concentration					0.047	0.052					0.080	0.093*
					(0.048)	(0.048)					(0.052)	(0.053)
Sum Hedge Fund Blockholder Concentration							-0.226	-0.212			-0.168	-0.145
							(0.254)	(0.257)			(0.255)	(0.257)
Sum VC/PE Blockholder Concentration									0.080	0.089	0.116*	0.131**
									(0.061)	(0.062)	(0.066)	(0.066)
Firm Control Variables	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	338	338	338	338	338	338	338	338	338	338	338	338
R ²	0.084	0.093	0.083	0.090	0.082	0.091	0.081	0.090	0.084	0.094	0.100	0.110
F Statistic	3.792***	2.763***	3.711***	2.687***	3.661***	2.720***	3.637***	2.675***	3.762***	2.803***	3.006***	2.481***

Note: ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively. Parentheses denote standard errors.

V. Robustness Checks

A. Robustness checks

Results are robust for the inclusion and non-inclusion of control variables, as can be seen in Panel A to C above.

Results are partly robust to using shorter holding period returns as dependent variables. Appendix tables A2-A7 show regressions using holding period returns (14, 33) and (0, 5), i.e., two separate shocks within the full Covid-19 shock. Table A2 yields the same results as in Panel A-C, albeit with lower coefficients and significance levels. Tables A3-A7 show little to no significant variables, except for a few exceptions. As for the joint regressions of ownership concentration and equity identity, only insider ownership shows significance in Tables A6-A7, suggesting that insider blockholder ownership mattered for the very initial period of the shock.

The robustness checks also emphasize that the joint effect of equity ownership concentration and equity identity matters when the full extent of a crisis is covered. That is, it is not enough to study shorter parts of the shock as it seems ownership influence is not reflected in return data. For example, it is more likely that blockholders exert influence on the company over the course of 33 days in comparison to the first five days. Therefore, by using dividend adjusted holding period returns from the 19th of February to the 23rd of March, our main regressions manage to capture the full extent of the shock and thus provide meaningful results.

VI. Conclusion

Our paper studies the relationship between blockholder ownership concentration for various equity identities against stock performance during the Covid-19 induced economic shock. Studying Swedish firms, we find evidence that equity ownership identity matters in that blockholder concentration of insider, institutional, corporate, hedge fund and venture capital ownership influences stock performance differently depending on the identity of the owner. We find support that insider, corporate and venture capital/private equity blockholder ownership contributes to stock performance. Thus, our findings support the notion that pre-Covid firm characteristics impact stock performance, namely in the context of equity ownership structures. We find negative marginal benefit of ownership blockholder concentration, such that most value of ownership concentration is derived when the largest blockholder increases its stake. Firms that had a single large blockholder performed better than those firms with more dispersed blockholder ownership, suggesting that the incentive for monitoring is proportional to the equity owned. Taking all into consideration, it is the joint effect of ownership concentration and equity identity that impacts firm value.

VII. References

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A. Appendix

A1. Variable definition table

Variable	Definition	Source
Largest Blockholder Concentration	Equity stake (%) of the largest owner holding more than 5% of equity in the firm, otherwise 0.	S&P Capital IQ Bureau van Dijk Orbis
Top 3 Blockholder Concentration	Sum equity stake (%) of the top three owners holding more than 5% of equity in the firm, otherwise 0.	S&P Capital IQ Bureau van Dijk Orbis
Top 5 Blockholder Concentration	Sum equity stake (%) of the top five owners holding more than 5% equity in the firm in the firm, otherwise 0.	S&P Capital IQ Bureau van Dijk Orbis
Sum Blockholder Concentration	Sum equity stake (%) of all owners holding more than 5% of equity in the firm, otherwise 0.	S&P Capital IQ Bureau van Dijk Orbis
Largest Insider Blockholder	Equity stake (%) of the largest insider owner holding more than 5% of equity in the firm, otherwise 0.	S&P Capital IQ Bureau van Dijk Orbis
Largest Corporate Blockholder	Equity stake (%) of the largest corporate owner holding more than 5% of equity in the firm, otherwise 0.	S&P Capital IQ Bureau van Dijk Orbis
Largest Institutional Blockholder	Equity stake (%) of the largest institutional owner holding more than 5% of equity in the firm, otherwise 0.	S&P Capital IQ Bureau van Dijk Orbis
Largest Hedge Fund Blockholder	Equity stake (%) of the largest hedge fund owner holding more than 5% of equity in the firm, otherwise 0.	S&P Capital IQ Bureau van Dijk Orbis
Largest Activist Blockholder	Equity stake (%) of the largest activist owner holding more than 5% of equity in the firm, otherwise 0.	S&P Capital IQ Bureau van Dijk Orbis
Sum Insider Blockholders	Sum equity stake (%) of insiders holding more than 5% of equity in the firm, otherwise 0.	S&P Capital IQ Bureau van Dijk Orbis
Sum Institutional Blockholders	Sum equity stake (%) of institutional owners holding more than 5% of equity in the firm, otherwise 0.	S&P Capital IQ Bureau van Dijk Orbis
Sum Corporate Blockholders	Sum equity stake (%) of corporates holding more than 5% of equity in the firm, otherwise 0.	S&P Capital IQ Bureau van Dijk Orbis
Sum Hedge Fund Blockholders	Sum equity stake (%) of hedge funds holding more than 5% of equity in the firm, otherwise 0.	S&P Capital IQ Bureau van Dijk Orbis
Sum VC/PE Blockholders	Sum equity stake (%) of venture capital/private equity firms holding more than 5% of equity in the firm, otherwise 0.	S&P Capital IQ Bureau van Dijk Orbis
f_c		
Firm size (log)	Defined as the market capitalization (logarithmic value) as of the 31 st of December 2019.	S&P Capital IQ
Leverage	Defined as Q4 2019 total debt divided by total assets.	S&P Capital IQ
Profitability	Defined as return on total assets, that is Q4 2019 EBIT divided by total assets.	S&P Capital IQ
Liquidity	Defined as Q4 2019 cash and cash equivalents divided by total assets.	S&P Capital IQ
f_{ind}		
Industry Dummies	Control for industry effects through dummies. Each observation is assigned a 1 if industry belonging is industrials, consumer discretionary, consumer staples, IT, communication services, real estate, materials, energy and health care, otherwise 0.	S&P Capital IQ

A2. Robustness Check: Equity Ownership by Blockholder Concentration (HPR 14, 33)

	<i>Dependent variable:</i>							
	HPR (14, 33)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Largest Blockholder Concentration	0.122*** (0.046)	0.151*** (0.047)						
Top 3 Blockholder Concentration			0.088** (0.039)	0.108*** (0.040)				
Top 5 Blockholder Concentration					0.060* (0.035)	0.077** (0.036)		
Summed Blockholder Concentration							0.053 (0.035)	0.069* (0.035)
Firm Control Variables	No	Yes	No	Yes	No	Yes	No	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	338	338	338	338	338	338	338	338
R ²	0.092	0.117	0.086	0.108	0.080	0.101	0.078	0.099
F Statistic	4.150***	3.574***	3.868***	3.294***	3.565***	3.038***	3.502***	2.970***

A3. Robustness Check: Ownership Concentration Identity Regression (HPR 14, 33)

	<i>Dependent variable:</i>											
	HPR (14, 33)											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Largest Insider Blockholder Concentration	0.073 (0.055)	0.079 (0.055)									0.083 (0.057)	0.093 (0.058)
Largest Institutional Blockholder Concentration			-0.080 (0.104)	-0.065 (0.104)							-0.020 (0.109)	0.004 (0.109)
Largest Corporate Blockholder					0.055 (0.047)	0.061 (0.047)					0.064 (0.049)	0.074 (0.049)
Largest Hedge Fund Blockholder							-0.193	-0.172			-0.177	-0.151

							(0.228)	(0.230)			(0.228)	(0.230)
Largest Activist Blockholder									0.288	0.316		
									(0.457)	(0.457)		
Firm Control Variables	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	338	338	338	338	338	338	338	338	338	338	338	338
R ²	0.077	0.094	0.074	0.089	0.076	0.093	0.074	0.090	0.073	0.090	0.084	0.102
F Statistic	3.421***	2.805***	3.264***	2.656***	3.367***	2.774***	3.280***	2.671***	3.237***	2.663***	2.725***	2.436***

A4. Robustness Check: Equity Ownership by Blockholder Concentration (Hedge Funds and VC/PE Firms) (HPR 14, 33)

	<i>Dependent variable:</i>											
	HPR (14, 33)											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Sum Insider Blockholder Concentration	0.039 (0.040)	0.040 (0.041)									0.047 (0.045)	0.056 (0.046)
Sum Institutional Blockholder Concentration			-0.090 (0.055)	-0.075 (0.056)							-0.046 (0.062)	-0.021 (0.063)
Sum Corporate Blockholder Concentration					0.037 (0.041)	0.040 (0.041)					0.047 (0.045)	0.058 (0.046)
Sum Hedge Fund Blockholder Concentration							-0.261 (0.218)	-0.239 (0.219)			-0.210 (0.219)	-0.184 (0.220)
Sum VC/PE Blockholder Concentration									0.062 (0.053)	0.069 (0.053)	0.073 (0.056)	0.087 (0.057)
Firm Control Variables	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	338	338	338	338	338	338	338	338	338	338	338	338
R ²	0.074	0.091	0.079	0.093	0.074	0.091	0.076	0.092	0.076	0.093	0.090	0.106
F Statistic	3.308***	2.705***	3.549***	2.788***	3.292***	2.707***	3.378***	2.728***	3.370***	2.774***	2.666***	2.372***

A5. Robustness Check: Equity Ownership by Blockholder Concentration (HPR 0, 5)

	Dependent variable:							
	HPR (0, 5)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Largest Blockholder Concentration	0.029 (0.022)	0.033 (0.022)						
Top 3 Blockholder Concentration			0.039** (0.018)	0.037** (0.019)				
Top 5 Blockholder Concentration					0.034** (0.017)	0.029* (0.017)		
Summed Blockholder Concentration							0.035** (0.016)	0.030* (0.017)
Firm Control Variables	No	Yes	No	Yes	No	Yes	No	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	338	338	338	338	338	338	338	338
R ²	0.042	0.069	0.050	0.073	0.049	0.071	0.050	0.072
F Statistic	1.787*	1.993**	2.151**	2.148**	2.109**	2.062**	2.180**	2.101**

A6. Robustness Check: Ownership Concentration Identity Regression (HPR 0, 5)

	Dependent variable:											
	HPR (0, 5)											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Largest Insider Blockholder Concentration	0.052** (0.026)	0.044* (0.026)									0.067** (0.027)	0.058** (0.027)
Largest Institutional Blockholder Concentration			0.044 (0.049)	0.036 (0.049)							0.080 (0.051)	0.070 (0.051)
Largest Corporate Blockholder					0.016 (0.022)	0.018 (0.022)					0.033 (0.023)	0.033 (0.023)
Largest Hedge Fund Blockholder							0.112 (0.108)	0.076 (0.108)			0.111 (0.107)	0.080 (0.108)
Largest Activist Blockholder									0.186 (0.216)	0.192 (0.215)		
Firm Control Variables	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	338	338	338	338	338	338	338	338	338	338	338	338
R ²	0.048	0.071	0.039	0.064	0.038	0.064	0.040	0.064	0.039	0.065	0.062	0.081
F Statistic	2.085**	2.055**	1.668	1.850**	1.632	1.859**	1.704*	1.846**	1.659	1.874**	1.966**	1.896**

A7. Robustness Check: Equity Ownership by Blockholder Concentration (Hedge Funds and VC/PE Firms) (HPR 0, 5)

	<i>Dependent variable:</i>											
	HPR (0, 5)											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Sum Insider Blockholder Concentration	0.036*	0.028									0.049**	0.041*
	(0.019)	(0.019)									(0.021)	(0.022)
Sum Institutional Blockholder Concentration			0.007	0.005							0.033	0.029
			(0.026)	(0.026)							(0.029)	(0.030)
Sum Corporate Blockholder Concentration					0.016	0.018					0.033	0.032
					(0.019)	(0.019)					(0.021)	(0.021)
Sum Hedge Fund Blockholder Concentration							0.128	0.094			0.127	0.099
							(0.103)	(0.103)			(0.103)	(0.104)
Sum VC/PE Blockholder Concentration									-0.019	-0.016	0.006	0.005
									(0.025)	(0.025)	(0.027)	(0.027)
Firm Control Variables	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	338	338	338	338	338	338	338	338	338	338	338	338
R ²	0.047	0.069	0.037	0.062	0.039	0.065	0.041	0.065	0.038	0.064	0.060	0.078
F Statistic	2.038**	1.994**	1.573	1.805**	1.649	1.876**	1.764*	1.876**	1.635	1.840**	1.733*	1.707**