

## THE OVER-INVESTMENT OF FREE CASH FLOW, CASH HOLDING, OWNERSHIP STRUCTURE: AN IMPACT OF COVID 19

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**Abstract:** This study aims to investigate the impact of Free Cash Flow (FCF), Cash holding and Ownership Structure on Overinvestment before and during Covid 19 . This study used panel data consisting of 147 listing service companies for the period 2016-2020. The panel data estimation model used is the Fixed Effect Model. The results of the study for the whole model show that FCF and Cash Holding have a negative and significant effect on overinvestment. Meanwhile, government ownership seems to have positive and significant effect on overinvestment, but then foreign ownership also has positive but insignificant. Furthermore, the results by taking into account the time period before and during Covid 19 showed that Free Cash Flow has positive and significant impact before Covid 19 and had a positive and insignificant effect during the Covid 19 period. Cash holding has negative and significant effect before Covid 19 but insignificant effect during Covid 19. Government ownership has positive and significant effect during Covid 19 but insignificant before Covid 19. The same results were also found for foreign ownership seems to have a positive and significant effect before Covid 19 and negative insignificant effect during Covid 19. In sum, it appears that government ownership is more dominant in influencing overinvestment in Indonesia.

**Keywords:** Free Cash Flow, Cash Holding, Ownership Structure, Over-investment

**Abstrak:** Penelitian ini bertujuan untuk menganalisis dampak *free cash flow*(FCF), *cash holding* dan *ownership structure* terhadap *Overinvestment* sebelum dan semasa Covid 19 . Penelitian ini menggunakan data panel yang terdiri dari 147 perusahaan jasa yang terdaftar di Bursa Efek Indonesia untuk periode waktu 2017-2021. Model estimasi data panel menggunakan Fixed Effect Model. Hasil penelitian secara keseluruhan menunjukkan bahwa *free cash flow* dan *cash holding* berpengaruh negatif dan signifikan terhadap overinvestment. Sementara government ownership berpengaruh positif dan signifikan terhadap overinvestment, sama halnya dengan foreign ownership juga positif namun tidak signifikan. Selanjutnya, hasil penelitian dengan mempertimbangkan periode waktu sebelum dan semasa Covid 19 menunjukkan hasil yang berbeda dimana *Free Cash Flow* memiliki dampak positif dan signifikan sebelum Covid 19 dan berpengaruh positif dan tidak signifikan pada periode semasa Covid 19 . *Cash Holding* berpengaruh negatif dan signifikan sebelum Covid 19 dan berpengaruh negatif namun tidak signifikan semasa Covid 19. Kepemilikan pemerintah berpengaruh positif dan signifikan semasa Covid 19 dan tidak signifikan sebelum Covid 19 . Hasil yang sama juga didapati Foreign ownership berpengaruh positif dan signifikan sebelum Covid 19 dan berpengaruh negatif dan tidak signifikan semasa Covid 19 . Secara lebih detail, terlihat bahwa kepemilikan pemerintah lebih dominan dalam mempengaruhi overinvestment di Indonesia.

**Kata Kunci:** Aliran Kas Bebas, Cash Holding, Struktur kepemilikan, Over-investment

## INTRODUCTION

The earlier studies on investment decisions of free cash flow have been explained in the problems of efficiency investment (Fazzari et al., 2000; Kholdy et al., 1993). The investment efficiency play an important role for the firms to invest in optimal level, when companies have higher internal financing, excess free cash flow is generated, thus companies can take advantage of excess internal funds for investment. However, due to moral hazard, excess free cash flow can also lead to overinvestment, the managers are more likely to spend the firm's budget for their own interest rather than shareholders' interest (He et al., 2019). Agencies face problems because managers spend large amount of money by undertaking projects with negative Net Present Value (NPV), thus free cash flow has positive relation on investment, in which managers in firms with higher free cash flow might have the incentive to over-invest to maximize their personal interest, leading to reduced firm value (Jensen, 1986). The empirical study of non-financial firms in Indonesia found that investment has negative effect on firm performance, this indicated that the overinvestment problem were occurred (Muchtar et al., 2018).

Using a sample of services listed firms, this paper examines whether and how free cash flow (FCF), cash holding and ownership structure either foreign or government owned firm are associated with the level investment by taking into account the time period before and during. Making decisions related to investment in uncertain condition are very threatening for the investors and companies, particularly invest in stock and would mainly cause financial markets (Wang et al., 2022). The research related to over-investment of free cash flow during the economic crisis due to the Covid 19 pandemic not find yet, but before the Covid 19 has been recognized (Chen et al., 2016; Moez & Amina, 2018a) suggested that higher free cash flow related with higher over-investment. Moreover, Shaharuddin et al. (2021) look over of FCF growth after Covid 19, and the result has insignificant effect on stock performance.

Further, we choice cash holding as the most liquid asset used by firm operation and related to investment decision. The relationship between cash holding and investment efficiency was completed in prior study, which is excess cash could mitigate the negative impacts of free cash flow on investment (Bhuiyan & Hooks, 2019; Guizani, 2017), which suggested that firm with higher cash holding involve the over-investment. The current study related cash holding and over-investment during Covid 19 suggested that increase cash holding during Covid 19 period lead to decrease over-investment (Dao, 2021). Generally, there are several motives of firm to hold cash such as transaction cost, speculation and hedging. Especially, cash holding as a hedging effect depends on the corporate governance system and risk awareness (Zhou, 2014), thus, cash holding and over-investment has negative relation.

Several prior study recently investigate the overinvestment issue of ownership structure (N. Chen et al., 2017; Pellicani & Kalatzis, 2019; Shi, 2019; Wei He & Kyaw, 2008), those studies were focused such as institutional ownership, managerial ownership and concentrate ownership that affect overinvestment. In the context of Chinese companies, which is found that state ownership has positive significant on overinvestment (Chen et al., 2016; He & Kyaw, 2018). Others study proposed that increase the proportion of state ownership lead to increase the sensitivity between overinvestment and free cash flow (Shi, 2019), this mean that state-owned firms have higher corporate investment than their matched firms due to government intervention. The recent empirical literature of the relation ownership structure suggested that foreign and government owned firm have important role in explain the over-investment problem. (Tran, 2020). Additionally, the foreign institutional investors play impotent role than domestic institutional investors to overcome the overinvestment problem. According to control and monitoring role, institutional investors are expected to implement good corporate governance to protect their investment, thus foreign owned firm would promote investment efficiency. Empirically, foreign owned firms have significantly better performance than domestic owned firms (Duong et al., 2021). However, the effect of foreign ownership on overinvestment efficiency has positive and significant effect on over-investment (R. Chen et al., 2017).

This study extend the our past study focused on corporate governance institutional ownership and FCF on investment efficiency (Muchtar et al., 2021), stated that institutional ownership has negative effect and FCF shows positive and significantly on efficiency investment of sub sector of Agriculture companies. Refer to the view of point of research gap, thus this study has the aims to investigate the free cash flow, cash holding, government and foreign ownership such a factors affected overinvestment for non-financial listed companies by taking account the period of before and during Covid 19 . Moreover, this study contributes to provide new empirical funding on the role of free cash flow and cash holding the part of internal finance and ownership structure in several ways.

## LITERATURE REVIEW

### Overinvestment

Prior literature has extensively discussed over-investing in relation to excess free cash flow funds. As explained above, free cash flow as the balance cash flow after a company invests in a positive NPV project (Jensen, 1986) and it is one of the important factors in a company's financial decisions. Other studies also reveal that investment opportunities are positively correlated with current cash flows, so investment and cash flows will be correlated. However, Modigliani and Miller (1958) argue that a firm's level of investment is not related to internally generated cash flows. Overinvestment occurs is when the company's investment is higher than expected. According to Moez and Amina (2018a) stated that overinvestment was related to managers models of overconfidence, which suggested that managers suffer from certain behavioral biases that would lead them make a wrong investment decision with negative NPV. The overinvestment problems are generally

experienced by companies that are in the mature stage and low growth rate, as well as assets in place and free high cash flow. In these cases, the good corporate governance mechanism lead to avoid managers to overinvest in unprofitable project, which is used debt to control the managers decision that lead to overcome the overinvestment problem.

In agency theory, the problem of overinvestment can be explained by the existence of information asymmetry among stakeholders (Tahir et al., 2019). Information asymmetry can lead to failure to achieve the company's initial investment objectives, namely to improve the welfare of shareholders. Cutillas Gomariz and Sanchez Ballesta (2014), explain that information asymmetry results in differences in information, which can later have an impact in overinvestment. Most of the literature indicates that companies can reduce information asymmetry by increasing the quality of financial reporting, higher quality financial reports will enable better oversight so that information asymmetry can be reduced. Other empirical studies was largely conducted (Belleflamme & Peitz, 2014; Tahir et al., 2019) suggest that reducing adverse selection, moral hazard and allowing managers to identify better investment opportunities will result in higher quality financial reporting and increase efficiency.

### **Free Cash Flow and Overinvestment Before and During Covid 19**

Free cash flow has important role in determine the over-investment problem in the companies. In previous studies, there is a positive relationship between investment and cash flow (Fazzari et al., 2000), which measures investment with capital expenditure. Other studies also reveal that investment opportunities are positively correlated with current cash flows, so investment and cash flows will be correlated. Moreover, free cash flow as the balance cash flow after the firm has invested in positive NPV projects (Jensen, 1986) and therefore, it is one important factor in a firm's financial decision, especially for investment. However, Modigliani and Miller (1958) argued that the firm's investment level is unrelated to internally generated cash flow. Moreover, there are two consequences with positive relation of free cash flow and investment. Firstly, the manifestation of agency problem, indicated that managers with higher free cash flow under their governance, might have incentives to overinvest, not only in positive NPV projects, but also in negative NPV projects to maximize their personal benefit rather than pay out dividends for shareholders (Jensen, 1986; Stulz, 1990). Thus, to control the problem associated with excess cash flow, managers use debt to finance the investment and distribute cash to payout dividend to shareholders. Secondly, the positive reflects on market imperfections, and this means that costly external finance creates the potential for internally generated by cash flow to expand the feasible investment opportunity (Fazzari. et al., 1988).

Other evidence found that free cash flow and overinvestment had a significantly positive correlation (Chen & Liao, 2012). Furthermore, the financially unconstrained firms tend to overinvest and the financially constrained firms are sensitive to free cash flow in the years of 2003 to 2008 for Chinese listed firms (Wei He & Kyaw, 2008). Studies in Chen and Lin (2010) indicates that managers handling excesses free cash flow have a strong inclination towards overinvestment. Based on agency theory predicted that overinvestment expenditure by entrenched managers also increases investment-cash flow sensitivity (Mullineux, 2011). Moreover, that over-investment in free cash flow is more serious to occur for rich firms and for firms with higher concentrate ownership. Therefore, we can conclude that firm's investment policy is not only dependent on external sources of a firm, but it most likely

depends on internal sources such as the cash flow. Since free cash flow has a direct impact on the value of the firm, investors can improve the company for having higher free cash flow, and at the same time, share prices will be undervalued; also when the firm has excess FCF, this may lead to a decline in their financial performance (Hong. et al., 2012). In studies of Kadioglu and Yilmaz (2017) the free cash flow hypothesis is proven to be valid in Turkish firms. Others empirical finding proposed that increases in free cash flow decreases the opportunities by which the manager can use available resources and increases stockholder return (Heydari et al., 2014). The finding by Khair et al. (2023), found that the effect of free cash flow seems to have negative effect on overinvestment. Hence, the hypothesis as follows:

H1: Free Cash Flow affect overinvestment positively for services companies

H1a: Free Cash Flow has positive effect on overinvestment before Covid 19

H1b: Free cash flow has negative effect on overinvestment during Covid 19

### **Cash Holding and Overinvestment Before and During Covid 19**

In many literatures have been discussed the motives of firm holdings cash including transaction costs, hedging and speculative motives (Arslan et al., 2006; Zhou, 2014). Cash holding is the amount of cash or cash equivalents that can be easily converted into cash that can reduce related risk and insolvency. The existing cash has important role to increase firm performance, because without sufficient cash would result firm activities and difficult to manage day to day operation. Thus, companies need to determine cash holding appropriately because the optimal cash holding level can support the financing decision. Cash Holding considered as the most liquid asset needs to be managed by the company as well as possible in order to maintain the stability of firm growth of the company (Bhuiyan & Hooks, 2019). In the other hand, cash holding can help to minimize risks from unexpected event that would lead firm in financial distress (Dao, 2021), and also high cash holding have many advantage to have investment opportunities without firm faced restricted by capital, thus cash holding have positive effect on firm performance (Amahalu & Ezechukwu, 2017). Therefore, every company needs to pay attention to what factors determine the company's cash holding level

In term of Covid 19 effect, all companies in many countries suffered most of Covid 19 outbreak, which is most firms affected by Covid 19 (Tawiah & O'Connor Keefe, 2022; Wang et al., 2022). Others study by Qin et al. (2020) suggested that the firm performance declined sharply followed by falling stock price, and has positive effect on cash holding. In Indonesia, the Composite Stock Price Index or we called IHSG on May 2020 was IDR 4.511, and decreased -28.21% (Rahmayani & Oktavilia, 2020). With regard to the negative effect of macroeconomics factors, thus firms tend to hold more cash in the firm to avoid the systematic risk during Covid 19 (Dao, 2021). Only firms with higher cash holding or sufficient cash flow will able to run the company operation during Covid 19. Firms with high cash holdings can take advantage of more investment opportunities without being too restricted by capital event firms faced Covid 19. Moreover, overinvestment occur when firm have excess cash, then manager tend to spend funds for unreasonable project that inefficiency investment. Thus, cash holding has positive impact on overinvestment (Khair et al., 2023). Then, the hypothesis is:

- H1: Cash holding has positive effect on overinvestment for services companies  
H2a: Cash holding has positive effect on overinvestment before Covid 19  
H2b: Cash holding has negative effect on overinvestment during Covid 19

### **Government Ownership and Overinvestment before and During Covid 19**

Discussion on overinvestment problem that related to ownership structure have documented by many studies (Anela & Prasetyo, 2020; Chen et al., 2016; Jiang & Zeng, 2014). The relationship between government ownership or state owned and overinvestment have been discussed intensely by many researcher in many countries, such study proposed by R. Chen et al. (2017) stated that state ownership strengthen the investment sensitivity that lead to increase investment inefficiency in China listed firms. Other study proposed by Cai (2013) indicated that state-owned enterprises with higher the number of director tend to increase overinvestment with access available cash in the firms. This suggested that the government have important role and responsibilities to control the firm operation to which reduced the overinvestment of access the free cash flow, also companies with government ownership have the right to appoint and control the manager (Jiang & Zeng, 2014).

Through research conducted by Sun and Tong (2018) found that government ownership has a significant positive effect on investment in service sector companies listed on the Indonesian Stock Exchange. Meanwhile, the government ownership has a negative effect on investment. Thus, the hypothesis as follows:

- H1 : Government ownership has positive effect on overinvestment of services companies  
H1a: Government ownership has positive effect on overinvestment before Covid 19  
H1b: Government ownership has positive effect on overinvestment during Covid 19

### **Foreign Ownership and Overinvestment Before and During Covid 19**

Foreign ownership is the number of share held by foreign individual investor and institution. The existence of an owner who comes from abroad will certainly have a good impact on the company, because the company is supervised by an owner who has good talent and experience to manage and control the company, it is different with the domestic company's. In addition, foreign ownership has a better ability to reduce agency conflicts, between shareholders and management, in supervising companies to carry out social activities (Al-Gamrh et al., 2020). The existence of foreign ownership participates in the company to be a party that is considered concerned about the company's performance (Halkos & Tzeremes, 2007). Foreign ownership as a sophisticated investor who has more expertise than domestic investors. Foreign ownership generally acts as a party that monitors or monitoring the company. The higher the foreign ownership, the stronger the external control over the company and reducing agency cost. Thus, the hypothesis can develop as below:

- H1 : Foreign ownership has negative effect on overinvestment of services companies  
H1a: Foreign ownership has negative effect on overinvestment before Covid 19

H1b: Foreign ownership has negative effect on overinvestment during Covid 19

## RESEARCH METHODOLOGY

### Data Collection and Measurement variable

The data of this study are annually data and collected from financial reports that available in website of Indonesia Stock Exchange (IDX) and the company's website itself for selected sample of 147 services companies with a period of 5 years from 2017 to 2021. The Time Period (TP) defined as categorical variable which is period 2017-2019 as TP=1 is before Covid 19 and period 2020-2021 as TP=2 is during Covid 19. Refer to inefficient investment, this study only focuses on overinvestment as dependent variable. First, to define the overinvestment, we should estimate the investment model to have residual value, this study proxy investment with capital expenditure (CAPEX), calculated by fixed asset current year less lagged fixed asset plus depreciation scaled by total. Tobin's Q is measured by total market value of equity plus book value of total debt divided by book value of total asset (Dakhlallah et al., 2020; Muchtar et al., 2018). Cash is net cash flow generated by operations scaled by total asset, while leverage proxy debt to equity ratio, calculated by total debt by total equity. Size measured by natural logarithm of total asset. Second, the overinvestment defined by positive residual, indicate as firm overinvest. The other independent variables are FCF, Cash Holding, Government ownership, foreign ownership and Size that expected to have impact on overinvestment. We define FCF is the ratio of cash flow from operation less Capital expenditure scaled by total asset (Muchtar et al., 2021). Cash Holding is measured by total cash and equivalent divided by total asset (Dao, 2021). Government ownership is the total share held by government and foreign ownership is the total number of share owned by foreign investors or institution divided by total outstanding share (Jiang & Zeng, 2014; Tran, 2020). The SIZE used as a control variable in the model.

### Empirical Models

The first model estimation of this study is to define the overinvestment as developed by (Richardson, 2006) to measure investment efficiency, which used Tobin's Q, cash, leverage and size as determinant of investment (N. Chen et al., 2017; Muchtar et al., 2021). The multiple regression of investment applied in this study as follows:

$$\text{INVESTMENT}_{it} = \beta_0 + \beta_2 \text{TOBIN'S } Q_{it} + \beta_2 \text{CASH}_{it} + \beta_3 \text{LEVERAGE}_{it} + \beta_4 \text{F\_SIZE}_{it} + \varepsilon_{it} \dots \dots \dots (1)$$

Besides, to investigate the FCF, Cash Holding, Government Ownership, Foreign Ownership and Size on Overinvestment by take consideration the time period of Covid 19, then empirical equation as follows:

Model 1 (Overall Model):

$$\text{OVER\_INVESTMENT}_{it} = \alpha + \beta_1 \text{FCF}_{it} + \beta_2 \text{CASH\_HOLDING}_{it} + \beta_3 \text{GOV\_OWNERS}_{it} + \beta_4 \text{F\_OWNERS}_{it} + \beta_5 \text{SIZE}_{it} + \varepsilon_{it} \dots \dots \dots (2)$$

Model 2 by Categorical Time Period:

In the model 2, the estimation of each independent variable interact with categorical variable which is TP=1 define as before Covid 19 and TP=2 as the period during Covid-19. Thus, the empirical equation presented as follows:

$$\begin{aligned} \text{OVER\_INVESTMENT}_{it} = & \alpha + \beta_1 \text{FCF}_{it} * \text{TP}_{12} + \beta_2 \text{CASH\_HOLDING}_{it} * \text{TP}_{12} \\ & + \beta_3 \text{GOV\_OWNERS}_{it} * \text{TP}_{1,2} + \beta_4 \text{F\_OWNERS}_{it} * \text{TP}_{1,2} \\ & + \beta_5 \text{SIZE}_{it} * \text{TP}_{12} + \varepsilon_{it} \dots\dots\dots(3) \end{aligned}$$

Where  $\alpha$  is single numerical determinant,  $\beta_1$ ,  $\beta_5$  are the coefficient parameters of each independent variable,  $\text{TP}_{12}$  is the categorical variable of time period of Covid 19, and  $\varepsilon$  is residual error.

## RESULT AND DISCUSSION

The preliminary results of this study are statistic descriptive and analysis correlation that represented the natural of the data that explain the mean, Media, Maximum, Minimum, standard deviation and observation. The descriptive statistics of this study divided within three Panel with the total observations are 735 consist of 5 years sample and 147 companies presented in Table 1. The results of overall data in Panel A show that the mean of overinvestment was 0.4545, and while compared to mean of overinvestment before and during Covid 19 in Panel B and C was 0.4080 and 0.5224 respectively. This indicates during crisis has higher mean compared as overall or before Covid 19 period. The mean of FCF in Panel A, B and C are 1.0325, 1.1372 and 0.8755 respectively, indicated that during Covid 19 FCF was lower that before. Moreover, the average value of cash holding for overall are 0.6909 not much different before Covid 19 is about 0.6758, but it is higher cash holding during Covid 19 with the mean of 0.7136. The ownership structure of services companies of the number of share held by government and foreign ownership are 31.83 and 34.24 percents respectively for overall observations, and similarly with the period before and during Covid 19 seems not much different, nevertheless government ownership is lower the number of share during Covid 19 is about 30.65 percent, and foreign also higher with mean is about 36.21 percent. Lastly, the mean of SIZE of companies for the three Panel are about 14.4639, 14.4805 and 14.4398 respectively.



**Table 1.** Descriptive Statistic

Panel A ( Overall )						
Variable	Mean	Median	Maximum	Minimum	SD	Obs.
OVER_INVESTMENT	0.4545	0.1638	6.5282	0.0010	0.9532	364
FCF	1.0325	0.0263	27.2974	-7.1938	3.1204	735
CASH_HOLDING	0.6909	0.0508	9.3995	1.1606	1.5413	735
GOV_OWNERS	0.3183	0.1627	0.9983	0.0000	0.3359	735
F_OWNERS	0.3424	0.2108	0.9983	0.0000	0.3395	735
SIZE	14.4639	14.1516	25.3936	4.4659	3.3024	735
Panel B (Before Covid 19 )						
OVER_INVESTMENT	0.4080	0.1604	6.5282	0.0016	0.8264	216
FCF	1.1371	0.0388	27.2974	-4,1992	3.3787	441
CASH_HOLDING	0.6758	0.0492	9.3995	1.5206	1.5001	441
GOV_OWNERS	0.3262	0.1760	0.9896	0.0000	0.3369	441
F_OWNERS	0.3293	0.1883	0.9983	0.0000	0.3307	441
SIZE	14.4805	14.1665	25.3936	4.4659	3.3068	441
Panel C (During Covid 19)						
OVER_INVESTMENT	0.5224	0.1660	6.0972	0.0010	1.1121	148
FCF	0.8755	0.0144	12.1297	-7.1938	2.6847	294
CASH_HOLDING	0.7136	0.0512	9.3163	1.1606	1.6035	294
GOV_OWNERS	0.3065	0.2336	0.9977	0.0000	0.3520	294
F_OWNERS	0.3621	0.2336	0.9977	0.0000	0.3520	294
SIZE	14.4398	14.1370	25.3872	4.5108	3.3014	294

Notes: OVER\_INVESTMENT is the positive residual value of investment, FCF is Free Cash Flow, CASH\_HOLDING is Cash Holding , GOV\_OWNERS is Government Ownership, F\_OWNERS is Foreign ownership and SIZE is the size of the company, SD is standard deviation and Obs. is number of observations.

The correlation analysis was carried out to determine the relationship between all independent variables on the dependent variable in this study. The results of the correlation analysis are presented in Table 2. The results show that FCF have positive relationship with Overinvestment for overall, as well as before and during Covid 19, but significant at 10% for overall and during Covid 19. CASH\_HOLDING have negative relation to overinvestment for overall and before Covid 19, but it has positive relation during Covid 19. Similarly with GOV\_OWNERSHIP, that have negative correlation with Overinvestment for overall and before Covid and significant at 10% before Covid 19, but it has positive during Covid 19 but insignificant. For the variable Foreign Ownership have negative correlation with Overinvestment but insignificant for all the Panel. Lastly, the firm SIZE has positive relation and significant only during Covid 19 at 5% level of significance.

**Table 2. Correlation Analysis**

Panel A (Overall)					
CORRELATION	OVER_INV ESTMENT	FCF	CASH_HO LDING	GOV_OW NERS	F_OW NERS
FCF	0.0978 (1.8702)*	1 ---			
CASH_HOLDING	-0.0034 -0.0651	0.0787 1.5032	1 ---		
GOV OWNERS	-0.0675 -1.2890	0.025 0.4775	-0.0828 -1.5824	1 ---	
F OWNERS	-0.0642 -1.2257	0.075 1.431	-0.0525 -1.0015	-0.4565 (-9.762)***	1 ---
SIZE	0.0601 1.1470	0.0104 0.1981	0.0141 0.4101	0.0141 0.2688	0.0689 1.3156
Panel B (Before Covid 19 )					
FCF	0.0784 1.1511	1 ---			
CASH_HOLDING	-0.0486 -0.7127	0.0781 1.1467	1 ---		
GOV OWNERS	-0.1265 (-1.8664)*	-0.0046 -0.0679	-0.0921 -1.3538	1 ---	
F OWNERS	-0.0244 -0.357	0.079 1.1594	0.0001 0.0028	-0.5012 (-8.4741)***	1 ---
SIZE	-0.0283 -0.4141	-0.0233 -0.3419	-0.0501 -0.7341	-0.0296 -0.4346	0.1438 2.127
Panel C (During Covid 19 )					
FCF	0.1362 (1.6619)*	1 ---			
CASH_HOLDING	0.0424 0.5136	0.0808 0.9806	1 ---		
GOV OWNERS	0.0009 0.0111	0.0606 0.7347	-0.0705 -0.8546	1 ---	
F OWNERS	-1136 -1.3816	0.0863 1.0472	-0.1184 -1.4419	-0.3937 (-5.1750)***	1 ---
SIZE	0.1589 (1.9457)**	0.0591 0.7163	0.1185 1.4426	0.0751 0.9103	-0.0256 -0.3099

Notes: The significant in the form of \*\*\*, \*\*, \* with a significance level at 1%, 5% and 10%. OVER\_INVESTMENT is Overinvestment, FCF is Free Cash Flow, CASH\_HOLDING is Cash Holding, GOV OWNERS is Government Ownership, F OWNERS is Foreign Ownership and SIZE are the size of the company.

This study used panel data for the equations (2) and (3), and the selected model of panel estimation, the Fixed Effect Model are appropriate. The results is presented at Table 3 for overall model and the estimation by TP=1 before Covid and TP=2 during Covid 19. The results of overall show that FCF have negative and significantly affected overinvestment, this indicated that increase FCF lead to reduce the overinvestment. This finding contradicted with the expected hypothesis, which is firm with excess FCF propensity to overinvest. This finding is in line with the current study proposed by (Khair et al., 2023). So that the data rejected the hypothesis H1. This implies that the services companies uses the excess cash or

available resources to invest in profitable project that would lead to increase firm value. This results not in line with (Chen et al., 2016). Meanwhile, the results of the effect of FCF on overinvestment before Covid 19 is positive but insignificant, but it has positive and significant impact on overinvestment during Covid 19 at 1 percent level of significance. This finding consistent with FCF hypothesis, firm with higher free cash flow firm tend to overinvest. Similar results of the effect of FCF during Covid 19 has positive and significant on overinvestment. This finding support the FCF hypothesis and contradict with the expected hypothesis. The positive coefficient indicate that increase FCF lead to increase firm to overinvest event in negative NPV project. This finding in line with the study (Moez & Amina, 2018b).

Next, the effect of cash holding on overinvestment is negative and significant for overall model as well as before and during Covid 19. This implies that increase holding cash on firm lead to reduce overinvestment. This finding contradict with the expected hypothesis for overall and before Covid 19. However, the results support the hypothesis during Covid 19 which is Cash holding affect negatively and significant on overinvestment. This implies that firm hold more cash or sufficient cash only to take profitable project that increase return to shareholders. Firms hold more case and reduced investment inefficiency of overinvestment specifically during Covid 19 (Dao, 2021).

**Table 3:** The Estimation Results for Overall Model and by TP

VARIABLE	MODEL 1 (Overall)		MODAL 2 (TP1 & TP2)	
	Coefficient	t-stat	Coefficient	t-stat
FCF	-0.0898	(-2.9590)***		
CASH_HOLDING	-0.0254	(-3.7553)***		
GOV_OWNERS	0.1091	(2.6344)***		
F_OWNERS	0.0232	0.6021		
SIZE	-0.0348	(-3.36359)***		
FCF*(TP_COVID=1)			0.0109	1.0216
FCF*(TP_COVID=2)			0.0810	(8.8241)***
CASH_HOLDING*(TP_COVID=1)			-0.0370	(-3.7150)***
CASH_HOLDING*(TP_COVID=2)			-0.0525	(-2.6095)***
GOV_OWNERS*(TP_COVID=1)			-0.0371	-0.3369
GOV_OWNERS*(TP_COVID=2)			0.1854	(1.7760)*
F_OWNERS*(TP_COVID=1)			-0.0260	-0.2747
F_OWNERS*(TP_COVID=2)			-0.3122	-1.5196
SIZE*(TP_COVID=1)			-0.0213	(-2.2692)**
SIZE*(TP_COVID=2)			-0.0170	-1.1380
R-squared		0.8998		0.0844
Adjusted R-squared		0.8284		0.0512
F-statistic		(12.6041)***		(2.5427)***
Prob(F-statistic)		0.0000		0.0060
Durbin-Watson stat		2.1002		1.2681

Notes: Significant level at 1%, 5% and 10% (\*\*\*, \*\*, \*) significance.

The results of the effect of Government ownership seems to have positive and significantly affect overinvestment. While compared to the results before Covid 19 is

negative but insignificant. Moreover, it has positive and significant effect at 10 percent on overinvestment during Covid 19. This suggested that increase cash holding would lead to increase overinvestment, thus this finding same with the result by Khair et al. (2023) and Bhuiyan and Hooks (2019) state that higher cash holding engage the overinvestment. In this case, the firm owned by government strengthen to investment opportunity that lead to investment efficiency. Lastly, the finding show that foreign ownership has positive effect on overinvestment in overall model, but that was seems to have negative effect on overinvestment by time period before and during Covid 19, nonetheless those finding statistically insignificant. This result in line with the study proposed by Tran (2020) and R. Chen et al. (2017). The negative coefficient indicate that foreign ownership has important role in control the manager decision for investment efficiency.

## CONCLUSION

The purpose of this study is to investigate the overinvestment problem of free cash flow, cash holding, government and foreign ownership by taking into account the period before and during Covid 19. This study employed fixed effect model of data panel for the period 2017 to 2021 with 147 services sector firms. The result show that FCF, Government ownership and SIZE have negative effect on overinvestment, but FCF has positive and statistically significant on overinvestment after Covid 19. Moreover, cash holding seems to have negative and statistically affect overinvestment before and during Covid 19. This indicate that increase cash holding would lead to decrease the overinvestment of services companies. The finding of government ownership affect overinvestment during crisis period, this means that increase the government ownership lead to increase the overinvestment. The contradict results show that foreign ownership seems to have negative impact for the period before Covid 19 and as well as during crisis. In sum, the positive coefficient indicate that firm increase FCF and cash holding would to increase overinvestment for overall data analysis. Thus, government ownership has higher impact on overinvestment with the large coefficient of cash holding compared to other variables. This funding are inline with prior study as already explained above. The empirical results have implication that the excess cash on companies does not increase the overinvestment and hold cash to arise the firm objective in order to maximizes the firm value.

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