Examining Free Cash Flow Theories in the Non-Financial Sector of Pakistan: A Comprehensive Analysis of PSX-Listed Non-Financial Firms

Qiyanoos Khan[1], Waqar[2] iD, Manzar Zia[3], Muhammad Afraz Abdur Rehman[4]

[1] MS Scholar, Institute of Management Sciences Peshawar, Pakistan. Email: qiyanooskhan12@gmail.com
[2] MS Scholar, Institute of Management Sciences Peshawar, Pakistan. Email: waqararif@gmail.com
[3] MS Scholar, Institute of Management Sciences Peshawar, Pakistan. Email: manzarzia7@gmail.com
[4] Lecture, Institute of Management Sciences Peshawar, Pakistan. Email: afraz.rahman@imsciences.edu.pk

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ABSTRACT

The aims of this research were to analyze free cash flow related theories in the non-financial sector of Pakistan namely agency theory, Pecking order theory, and static trade-off theory. Free cash flow was taken as dependent variable along with three independent variables (Tax rate, leverage, and retention). Moreover, firm's size, growth, dividend, tangibility, profitability, and cash flow volatility were taken as controlling variables. The data were extracted from four hundred eighty-eight non-financial firms listed on PSX for the period of 20 years, i.e., 2001-2020. We used weighted least square model for analysis due to heteroscedasticity diagnosed in data set. The study found that free cash flow is negatively related to leverage and tax, while the relationship with retention is positive. The results of this study are consistent with the hypothesis of agency theory, trade-off theory, and pecking order theory. This study is of paramount significance in comprehending the intricacies of free cash flow theories within the non-financial sector of Pakistan. The findings derived from this analysis have the potential to make substantial contributions to the enhancement of strategic financial management practices.

1.   Introduction

Free cash flow is the amount remaining with the company after covering all expenses. Profitability measurement includes expenditures on fixed assets and changes in working capital, while excluding all non-cash cost expenses from a statement of financial position (Cahyani & Alliyah, 2019). Jensen (1986) is of the view that free cash flow is used for dividend disbursement and stock repurchase, but not all firms practice it. According to Nadir, Alam, Ali, and Rahim (2023), managers sometimes use free cash flow to favor themselves in the form of bonuses or invest it in a project having a positive NPV, which in turn increases companies' power and decreases chances of takeovers. Investors have to consider this alarming issue while investing their funds.

Firm management plays an important role in the financial activities of the company. According to Smith (2002), the sincerity and commitment of hired agents do not remain the

same over time. Agents sometimes work and make policies in their own interest, in addition to that of shareholders. These conflicts of interest raise the problem of agency. Berle first introduced the idea of the agency problem in 1932. He believed that the agency problem arises due to the separation of ownership and control. After the separation of ownership and control, shareholders could not directly interfere in the company's decision-making. Managers have the power to either distribute the dividend or retain it for earnings. If the managers retain the profit, it will lead to an increase in the firm's internal resources; on the contrary, if they distribute the profit to shareholders, it will reduce retained earnings and internal sources of financing.

Company ventures into the capital market with the goal of raising funds, intending to generate substantial cash flow and enhance shareholder value. However, at times, these accumulated cash flows are retained instead of being distributed to shareholders as dividends, with the aim of reinvesting them in various projects (Dhumale, 1998). Numerous agency problems are associated with free cash flow, incurring costs for the company, such as auditing fees and monitoring costs. Scholars have suggested various methods of agency problem minimization. Firstly it can be reduced via refraining, a method of discouraging managers from using FCF. Kaplan (1989), is favoring a capital structure consist of leverage, he goes on while adding that including leverage in capital structure provides an edge to external financer to oversee companies earning as will as managers' behaviors towards Fre cash flow. Moreover, Jensen (1986), are of the view that the chances of takeover can be decreased via investing in Positive NPV projects, they also put that this method will refrain management from self-dealing.

The second way is to pay dividends to shareholders when the firm does not have positive NPV projects. This will reduce agency costs as the firm will remain with less FCF (Wang, 2010). The third is the encouraging approach. According to Fox and Marcus (1992), managers who are given ownership will have dual interests and work for the company honestly. Lehn and Poulsen (1989) and Dial and Murphy (1995) supported the encouragement approach. Another approach is the inclusion of institutional investors who limit the company's level of investment and keep an eye on them. This study attempts to investigate the FCF theories in the context of Pakistan.

The development of procedures and policies for Free Cash Flow (FCF) in Pakistan's non-financial sector is currently underway. This research offers valuable insights for firm managers in making decisions regarding the retention and release of FCF. By utilizing data from 488 firms over a span of 20 years, this study presents a unique opportunity to comprehensively analyze these theories. Notably, no other study has employed such an extended timeframe for their research, making the findings of this analysis particularly significant.

The study makes several key contributions. Firstly, it establishes a correlation between FCF and agency theory, trade-off theory, and pecking order theory in the Pakistani context, a connection previously absents from the literature. Secondly, the analysis incorporates previously overlooked control variables such as size, growth, dividend, tangibility, profitability, and cash-flow volatility. Thirdly, the study encompasses all listed non-financial firms over a 20-year period, providing a comprehensive overview of FCF and related theories. In doing so, it illuminates commonalities in the understanding of FCF and contributes significantly to the existing literature, specifically within the Pakistani context.

The study analyses FCF with the agency, trade-off, and pecking order theories. This study strived best to go deep to analyze these theories in the non-financial financial sector. Data disparities, varying scales, missing data, and defaulted firms pose significant obstacles to research in Pakistan. Enhanced data quality, particularly regarding managerial ownership, could address gaps. Current challenges present opportunities for future researchers to contribute meaningfully by delving into agency-related dynamics with improved datasets.

2.   Literature Review

Free cash flow (FCF) sparks debates among researchers, exploring its impact on agency and investment challenges. Efficient internal systems, indicated by high FCF, enhance competitiveness (Khoa & Thai, 2021). Choices regarding FCF, influenced by investment opportunities, external funds, and debt capacity, affect a firm's performance (Kadioglu & Yilmaz, 2017). Agency costs linked to FCF payouts drive takeover activities Jensen (1987), signaling confidence, shareholder value, and reduced issuance costs for firms utilizing FCF (Khoa & Thai, 2021).

2.1.   Theoretical Framework

The disbursement and withholding of free cash flow are critical decisions for firm managers. Phenomena such as overinvestment and underinvestment are caused by miscalculated decisions regarding free cash flow by firm management. Investors consider an efficient internal operating firm that generates high free cash flow. Firms with high free cash flow have an edge in venturing. However, according to agency theory firms with high FCF have more agency problems. On the other hand, the Trade-Off Theory holds the view that high leveraged capital reduces the level of free cash flow and, hence, mitigates agency problems as well. Moreover, pecking order theory postulates that the more the firm retains from profits, the more free cash flow (FCF) it will have for future investment.

Theories like Agency Theory, pecking order theory, and Static or Trade-off theory are connected with Free cash flow.

2.2.   Agency Theory

Agency theory have been widely discussed throughout the literature. Agency problem occurs when hired management used organizational resources in their best interest rather than that of shareholders. Moreover, by implication, the hired agents not only use the company's resources but also make risky financial decisions that are only born by the shareholders (Almeida & Campello, 2007). Companies with more investment opportunities have lesser agency costs related to free cash flow. Their FCF is invested in a profitable project. On the other side, companies lacking investment opportunities face overinvestment problems (Nekhili, Amar, Chtioui, & Lakhal, 2016). Agency problems are severe in firms with high FCF. Agents usually make investments not in favor of the shareholders but rather for them. For this purpose, managers use accounting discretion to maximize reported earnings (Astami, Rusmin, Hartadi, & Evans, 2017). The firm's managers try to hold considerable amounts of liquid assets and retained earnings to increase their power. Additionally, the managers demand special authority over the company's financing and investment choices, which negatively impact the owners' wealth. Therefore, deciding how much free cash flow to hold is a significant problem in avoiding agency problems (Tahir, Alifiah, Arshad, & Saleem, 2016).

This comprehensive study explores various aspects of agency problems associated with free cash flow (FCF) decisions. Cardoso, Martinez, and Teixeira (2014) find that managers may manipulate FCF, emphasizing the importance of investor vigilance. Astami et al. (2017) and Khidmat and Rehman (2014) support the link between high FCF and agency problems. Agency costs are influenced by growth opportunities, with debt and institutional investors offering potential mitigations (Duggal & Millar, 1994; Mahadwartha & Ismiyanti, 2008). Repurchasing shares and paying dividends are suggested strategies to alleviate agency costs (Oprea, 2008; Wang, 2010). Firms with high FCF face challenges, and effective management is crucial for shareholder value (Gul & Tsui, 1997; Jensen, 1986; Kauer & Silvers, 1991). The study concludes with insights into FCF's impact on private transactions, shareholder ownership, and potential

strategies for mitigating agency costs (Bontempi, 2002; Khan, Kaleem, Nazir, & Khan, 2012; Lehn & Poulsen, 1989; Zhang, 2009).

H1: There is a negative relationship between FCF and leverage.

Wang, Strong, Tung, and Lin (2009) investigated the link between Free Cash Flow (FCF) and Agency Costs (AC) using standard FCF variables and six proxy variables for agency costs. The study revealed conflicting effects: FCF incurred agency costs through managerial perquisites but also reflected an efficient internal operating system.

2.3. Trade-off Theory

Among capital structure theories, the Trade-off theory is the oldest and is connected with Miller and Modigliani. Trade-off theory was introduced in early 1970. It was surrounded by many challenges but remained dominant in determining the company's capital structure. This theory is based on the MM theory, with taxes developed in the 1950s. The theory states that firms' leverage is determined by matching the tax shield saving against the bankruptcy cost.

According to the study of Kafayat, Rehman, and Farooq (2014), large firms can raise debt soundly per the trade-off theory. These firms are more profitable, and their earnings are consistent. Increasing deb will get down FCF as most of the earnings will be paid out as interest and principal amount. Based on the above argument, the following hypothesis is proposed;

H2: There is a negative relationship between FCF and firm size.

According to trade-off theory firms should use debt until the tax shield benefit exceeds bankruptcy costs. This theory advocates for debt due to tax advantages, lower risk, and cost-effectiveness, predicting that increased leverage in the capital structure will decrease Free Cash Flow (FCF) through interest and principal payments (Serrasqueiro & Caetano, 2015).

H3: There is a negative relation between FCF and tax.

Laiho (2011) notes that incomplete monitoring by owners may drive managers to expand the company beyond optimal levels, contrary to Jensen (1986) who suggests unmonitored firms with high free cash flow invest in unprofitable projects. Bukit and Nasution (2015) support Jensen's theory. Projects funded through internal finance are challenging to monitor (Laiho, 2011). According to the Static Trade-Off Theory, a financially strong firm can enhance value by issuing debt and repurchasing stock, lowering the cost of capital Carroll and Griffith (2001) Institutional investors, independent directors, and audits are crucial for curbing earnings manipulation (Bukit & Nasution, 2015).

According to the study of Serrasqueiro, Nunes, and da Rocha Armada (2016), the oldest and more profitable firms rely less on debts which indicates the hypothesis of the pecking order theory. These firms retain more and have more FCF. Having these attributes, they rarely depend on debt. According to this, the following hypothesis is proposed;

H4: There is a positive relationship between FCF and Profitability.

On the other hand, large-size SMEs rely more on debt which corroborates the trade-off theory. So, the study can conclude that these two are not mutually exclusive. The study of Serrasqueiro et al. (2016) indicated that firms move towards their optimal ratio relatively quickly. Because the cost of imbalance is greater than the financial cost, they bear it. The study of Kafayat et al. (2014) indicated that firms paying dividends could raise funds simply by cutting

their dividends because dividend payout decrease FCF. Based on this, the study proposed the following hypothesis;

H5: There is a negative relationship between FCF and dividend payout.

2.4.   Pecking Order Theory

Pecking order theory is introduced after the trade-off theory as TOT ignores information asymmetry. The pecking order theory suggests that firms should finance themselves internally through reserves. In case of unavailability of resources, firms should switch to debt and, as a last resort, to ordinary shares (Buus, 2015). Pecking order theory uses hierarchy in financing and seeks the exemption of issuing costs if possible.

According to Harbula (2001) study, leverage is used as a measure of control, not funds. When the firm has high tangible assets, it can quickly raise debt by keeping its assets as collateral. The creditors are not hesitant and promptly provide the loan. According to this, the following hypothesis is proposed;

H6: There is a negative relationship between FCF and tangibility.

Laiho (2011) suggests incomplete monitoring prompts managers to overexpand, contrasting Jensen (1987), who associates unmonitored firms with high free cash flow investing in unprofitable projects. Bukit and Nasution (2015) support Jensen. Internally financed projects are hard to monitor (Laiho, 2011). In line with the Static Trade-Off Theory, financially strong firms can boost value by issuing debt and repurchasing stock to lower the cost of capital (Carroll & Griffith, 2001). Institutional investors, independent directors, and audits are vital for curbing earnings manipulation (Bukit & Nasution, 2015). When the firms are profitable, they can retain more in the business, which increases FCF. According to this, the following hypothesis is proposed;

H7: There is a positive relationship between FCF and Retention.

Studies, including Vanacker and Manigart (2010), support the pecking order theory, noting large profitable firms favor retained earnings for projects despite available debt capacity. Conversely, low-profit firms, especially those heavily invested in intangible assets, rely more on external funds. Although the theory advocates debt preference in the absence of capacity issues, Nadir et al. (2023) finds small high-growth firms still resort to debt, contrasting with Vanacker and Manigart (2010) findings. Bontempi (2002) attributes the theory to information asymmetry, supported by Fatma and Chichti (2011), who favor internal funds. Financing hierarchy varies by size and development level; larger firms rely more on internal finance, while smaller firms often resort to debt (Frank & Goyal, 2003). Kvint (2010) and Tahir et al. (2016) show that trade-off and pecking order theories are not mutually exclusive. Serrasqueiro et al. (2016) and Shah, Hijazi, and Javed (2004) emphasize financial support for growing firms, with the former highlighting debt as a secondary resource and the latter suggesting leverage for tax shield benefits.

According to this, the study proposed the following hypothesis;

H8: There is a negative relationship between FCF and growth.

Bhundia (2012) and Jensen (1986) highlight the challenge of allocating free cash flow (FCF) for companies, particularly severe under the pecking order theory when FCF is abundant. Firms often prefer retained earnings for project financing, facing minimal resistance and allowing management control due to information asymmetry (Carpenter, 1994). The literature review

emphasizes agency theory, pecking order theory, and static trade-off theory in relation to FCF. Studies, such as Kadioglu and Yilmaz (2017), Wang (2010), and Almeida and Campello (2007), indicate that FCF-rich firms may make excessive investments leading to poor performance. Self-dealing concerns and the need for more accurate accounting values are noted by Toumeh and Yahya (2017) and (Cardoso et al., 2014). Firms with investment opportunities avoid overinvestment problems Nekhili et al. (2016), while managers aim to retain maximum FCF for increased power (Cardoso et al., 2014). Debt in the capital structure and institutional investors reduce the likelihood of accounting earnings manipulation (Byrd, 2010; Duggal & Millar, 1994; Khidmat & Rehman, 2014; Mahadwartha & Ismiyanti, 2008). Most researchers support the pecking order theory, acknowledging a finance hierarchy in project financing (Buus, 2015). Large firms rely less on external funds, fostering their capital market Manos, Green, and Murinde (2004), prompting the need for further research on FCF usage and managers' investment decisions.

2.5. Research gap

Many studies have been conducted on these theories. Still, researchers cannot suggest the theory that best explains the situation. However, many asserted that the pecking order theory better explains the organizations' behavior than the static trade-off theory. None of these theories can be rejected. So far, this is the first study examining non-financial firms listed on PSX to analyze the theories related to FCF empirically. For preceding researchers, examining the uses of FCF in Pakistani firms and how FCF influences firm performance is suggested.

3. Methodology
3.1. Population and Samples

The study conducted uses secondary data. Four hundred eighty-eight firms are taken from non-financial sectors listed on the Pakistan stock exchange. These firms represent the whole non-financial sector. This study uses the complete census for analysis. Therefore, the study has no sample selection and sampling techniques. Using the entire census for research gives us the edge of no biases in our study.

3.2. Data Sources

The data is downloaded from State bank of Pakistan publications. "Balance sheet analysis of non-financial rims listed at Pakistan Stock Exchange." This booklet contains five years of income statement and balance sheet analysis data. This publication contains the necessary information on mandatory accounts of the financial statements of all listed organizations of PSX for five years. The time frame for the data is 20 years, i.e., from 2001 to 2020. The study used four versions of this booklet containing the data from 2001 to 2020.

3.3. Removal of Outliers

Data collected for the study is 488 firms from twenty-eight non-financial industries listed on PSX. The data is collected for 20 years, i.e., from 2001 to 2020. The following criteria were used to exclude the firms for analysis.

- Firms for which data was unavailable for any year (2001 to 2020)
- Firms that were defaulters and data was not available (2001 to 2020)

The total number of observations was 9762 for 488 firms. After removing outliers, 2717 observations and 353 firms were left for analysis. Our analysis consists of four models, which are mentioned in later pages, and nine variables that are based on different theories.

3.4.   Variables Explanation

Following is the explanation of the dependent, independent, and control variables.

Table 1
Variable names, symbols, variable nature, and formula for measurement.

Variable Name	Symbol	Variable Nature	Measured By	Author's Reference
Free Cash Flow	FCF	Dependent	Operating Income before depreciation / Total assets	(Khan et al., 2012)
Leverage	LEV	Independent	Total liabilities/ Total assets	(Kadioglu & Yilmaz, 2017)
Retention	RET	Independent	ONE1-Payout ratio	(Kadioglu & Yilmaz, 2017)
Effective Tax Rate	ETR	Independent	Tax expense/ pretax income	(Lei, 2020)
Dividend Payout Ratio	DPR	Control variable	The value is directly extracted from the financial statement	(Atiyet, 2012)
Profitability	PROF	Control variable	ROA- EBIT/Total Asset	(Afza & Hussain, 2011)
Size	SIZE	Control variable	The logarithm of Total Assets	(Kafayat et al., 2014)
Tangibility	TANG	Control variable	The standard deviation of operating assets	(Serrasqueiro et al., 2016)
Growth	GRO	Control variable	Percentage change in Total assets	(Serrasqueiro et al., 2016)
Cash-flow Volatility	SD-OCF	Control variable	The standard deviation of operating cash flow	(Khidmat & Rehman, 2014)

3.5.   Estimation Technique

In this research, we utilize multiple regression analysis to explore the interconnections among variables. This methodology proves highly effective in evaluating the influence of diverse factors on free cash flow within the domain of non-financial firms listed on the Pakistan Stock Exchange (PSX). The selection of this analytical approach is substantiated by its capacity to comprehensively grasp intricate relationships and furnish resilient statistical insights.

3.6.   Models of the Study

To conduct analysis, four regression models are used based on panel data.

3.6.1. Agency Theory

$$FCF_{it} = \alpha_{it} + \beta_1 LEV_{it} + \sum_{k=2}^{6} \beta_k z_{k,i,t+\varepsilon_{it}} \qquad (1)$$

Where FCF is free cash flow, LEV is leverage, ε is an error term, and Z is six control variables.

3.6.2. Trade-off Theory

$$FCF_{it} = \alpha_{it} + \beta_1 ETR_{it} + \sum_{k=2}^{6} \beta_k z_{k,i,t+\varepsilon_{it}} \qquad (2)$$

FCF is free cash flow, ETR is the effective tax rate, ε is the error term, and Z is the six control variables.

3.6.3. Pecking Order Theory

$$FCF_{it} = \alpha_{it} + \beta_1 RET_{it} + \sum_{k=2}^{6} \beta_k z_{k,i,t+\varepsilon_{it}} \tag{3}$$

Where FCF is free cash flow, RET is Retention in the business, ε is the error term, and Z is six control variables.

3.6.4. Full Model for All Variables

$$FCF_{it} = \alpha_{it} + \beta_1 RET_{it} + LEV_{it} + ETR_{it} + \sum_{k=2}^{6} \beta_k z_{k,i,t+\varepsilon_{it}} \tag{4}$$

Where FCF is free cash flow, RET is retention ratio, LEV is leverage, ETR is the tax, ε is an error term, and Z is six control variables.

4. Result and Discussion
4.1. Descriptive Statistics

The descriptive statistics provide a snapshot of key variables. For Free Cash Flow (FCF), the mean is 9.95 with a standard deviation of 14.8, indicating significant investments and firms holding FCF 3.8 times of assets. Leverage has a mean of 57.2, aligning with the trade-off theory. Retained earnings, with a mean of 83.6%, support the pecking order theory's hypothesis on financing hierarchy. The effective tax rates mean of 43 suggests firms aim for an optimal debt level. Profitability has a mean of 12.5%, with firms earning up to 200% of their assets. Size, tangibility, and growth exhibit varying means, reflecting the characteristics of firms in the sample.

Table 2
Descriptive Statistics

VARIABLES	(1) N	(2) Mean	(3) SD	(4) Min	(5) Max
FCF	2,965	0.0995	0.148	-0.413	3.773
LEV	3,445	0.572	0.212	0.00287	1
RET	2,951	0.836	0.233	0.00123	1
ETR	3,010	0.428	1.863	0	58.78
DPR	2,951	0.164	0.233	0	0.999
ROA/PROF	3,021	0.125	0.108	0.000338	2.059
SIZE	3,445	14.81	1.631	7.696	20.50
TANG	3,444	0.652	0.240	0	0.999
GRO	3,486	0.0507	0.457	-1	4.780
Def d	6,156	0.426	0.495	0	1
Number of ids	380	380	380	380	380

Note: FCF is free cash flow calculated by dividing operating income before depreciation by total assets, LEV is leverage calculated by dividing Total liabilities by total assets, RET is retention ratio calculated by 1 minus payout ratio, ETR is the effective tax rate calculated by tax expense by pre-tax income, DPR is dividend payout- values are directly extracted from financial statements, PROF is profitability calculated by Return on Assets minus earnings before interest and tax by total assets, Size is calculated by taking the logarithm of total assets, TANG is asset tangibility and is calculated by SD of operating assets, GRO is growth and is calculated by the percentage change in total assets, VOL-OCF is cashflow volatility and is calculated by taking SD of operating cash flow. References of authors for these calculations are given in Table 2.

4.2. Correlation

Table 3 describes the result of correlation for all the variables included in the study. As for the definition, the value of correlation lies between -1 to +1. Values near +1 mean a positive correlation, while values near -1 mean a negative correlation, while 0 indicates no correlation. This measures both the strength and direction to vary together.

The correlation between FCF and retention is positive. It shows that the more a firm retains from its profits, the more FCF it will have. There is a negative relation between FCF and leverage. When a firm borrows, it has to pay the amount as interest and principal. So, the amount in the form of FCF will be less for the firm's managers.

The correlation between FCF and DPR is negative. This means that the firm will remain with less FCF if the company pays the amount as a dividend. There is a moderate positive relation between FCF and the firm's Profitability. The more profitable a firm is, the more FCF it will hold. The size of the firm and FCF is negatively correlated. Large-size firms can quickly raise debt from the market. After paying interest and principal amount, the firm remains with less FCF. Tangibility. FCF is negatively related, meaning the more tangible assets the company has, the less FCF it will possess. FCF and ETR are negatively correlated. ETR encourages the firm to borrow more debt which reduces the FCF.

Table 3
Matrix of correlation

Variables	(FCF)	(RET)	(Def d)	(LEV)	(DPR)	(ROA)	(SIZE)	(GRO)	(TANG)	(ETR)
(1) FCF	1.000									
(2) RET	0.003	1.000								
(3) Def d	-0.307	-0.021	1.000							
(4) LEV	-0.021	0.277	-0.026	1.000						
(5) DPR	-0.003	-1.000	0.021	-0.277	1.000					
(6) ROA/PROF	0.634	-0.285	-0.122	-0.127	0.285	1.000				
(7) SIZE	-0.007	-0.220	0.115	-0.018	0.220	0.128	1.000			
(8) GRO	-0.028	-0.039	0.134	-0.012	0.039	-0.008	0.093	1.000		
(9) TANG	-0.015	0.184	0.212	0.154	-0.184	-0.127	-0.095	0.098	1.000	
(10) ETR	-0.130	0.078	0.023	0.031	-0.078	-0.109	-0.022	-0.011	0.003	

Note: FCF is free cash flow calculated by dividing operating income before depreciation by total assets, LEV is leverage calculated by dividing Total liabilities by total assets, RET is retention ratio calculated by 1 minus payout ratio, ETR is the effective tax rate calculated by tax expense by pre-tax income, DPR is dividend payout- values are directly extracted from financial statements, PROF is profitability calculated by Return on Assets minus earnings before interest and tax by total assets, Size is calculated by taking the logarithm of total assets, TANG is asset tangibility and is calculated by SD of operating assets, GRO is growth and is calculated by the percentage change in total assets, Def-d is deficiency model of Shyam and sunder 1999. References of authors for these calculations are given.

4.3. Diagnostic statistics

Breusch-Pagan test was used to measure the degree of heteroscedasticity the P-Value of the provided test is very low and justify the Null hypothesis of the test. The Wooldridge test reveals a significant F-statistic of 11.535 with 1 and 278 degrees of freedom and a p-value of 0.0008, suggesting the presence of autocorrelation. This challenges the assumption of no serial correlation, indicating a need for further analysis or adjustments.

Table 4
Wooldridge test for autocorrelation and Breusch-Pagan Test Results.

Breusch-Pagan		Wooldridge test for autocorrelation	
chi2(1)	= 1081.83	F (1, 278	=11.535
Prob > chi2	= 0.0000	Prob > F	=0.0008

4.4. Multi Collinearity

The variance inflation factor was used to gauge multi collinearity the table show that for each variable the VIF value is less than the threshold value suggesting no collinearity.

4.5. Tests for Model Selection

The study applied the chow test and Hausman test to select the appropriate panel regression model for the study. The results of both are provided above. Since the P value of both tests is less than 5%, both tests suggest a fixed effect as the appropriate model for analysis.

However, the study also has previously detected the problem of heteroskedastic; therefore, for efficient estimates, the study applies the weighted least square technique (WSL) for the regression analysis.

Table 5
Multicollinearity

Variables	VIF	1/VIF
LEV	1.11	0.902858
ETR	1.01	0.986203
RET	1.22	0.820487
SIZE	1.60	0.626743
SD-OCF	1.50	0.664787
TANG	1.13	0.888751
ROA	1.12	0.896694
Def_d	1.11	0.903612
GRO	1.04	0.966027
Mean VIF		1.20

Table 6
Hausman Test

chi2(5)	(b-B)'[(V_b-V_B) ^(-1)] (b-B)
	=20.02
Prob>chi2	=0.0012

Table 7
Chow Test

F test that all u_i	= 0: F (353, 2372) = 4.47
Prob > F	=0.0000

4.6. Regression Test

There is a significant negative relation between FCF and leverage. Firms that are highly levered possess low FCF and hence lower agency costs. Levered firms pay most of the amount as principal and interest payments, ultimately decreasing FCF. The result of this research is consistent with (Kadioglu & Yilmaz, 2017; Kafayat et al., 2014; Khan et al., 2012). Similarly, the study shows a negative relationship between Dividend and FCF. As mentioned in literature section of this study dividend payment and internal funds retention has a negative relationship with reference to agency theory. The finding of this study is consistent with Kadioglu and Yilmaz (2017); Kafayat et al. (2014); Yousaf, Ali, and Hasan (2019). Our study is also consistent with the investigations of Tong and Green (2005) and Khidmat and Rehman (2014), that as per pecking order theory, paying dividends reduces FCF.

There is a positive relationship between FCF and the Profitability of the firm. The more profitable the firm is, the more FCF it will have. As per the agency theory, the relationship between FCF and Profitability is positive. The study of Yousaf et al. (2019) and Kamran, Zhao, and Ambreen (2017) reported the same results. The results of this study are also confirmed by Skoogh and Swärd (2015). As per pecking order theory, more profit will lead to an accumulation of FCF over time.

The FCF and size of the firm are significantly negatively related. This is because the more prominent firm, the more bargaining power over creditors and the lower risk of default. As per trade-off theory, when the cost of leverage decreases, the level of leverage increases; in the presence of more leverage, the FCF of the firm decreases. Our results are consistent with the study (Afza & Hussain, 2011; De Jong, Kabir, & Nguyen, 2008; Marsh, 1982; Titman & Wessels, 1988; Yousaf et al., 2019). However, Khan et al. (2012) 's results are contrary, which state that FCF and size are positively related. The studies of Fama and French (1989); Khidmat and Rehman

(2014), and Kafayat et al. (2014) supported their findings. They believed that larger firms hold more FCF to finance their projects. Furthermore, as per the pecking order theory, in the study of Serrasqueiro et al. (2016), there is less information asymmetry between owners, managers, and creditors. With less asymmetry information, firms take more debt on favourable terms. This, too, indicates a negative relation with FCF.

There is a negative relationship between FCF and growth. When a firm is profitable and has fewer volatile earnings, the firm intends to use leverage to take advantage of the tax shield. As per trade-off theory, the relation becomes negative between FCF and growth in the presence of leverage. The study of Serrasqueiro et al. (2016) confirmed our results. As per the pecking order theory, firms with high growth opportunities must undertake investment projects which need finance. For financing, firms will adopt external finance if internal exhausts. This, too, indicates a negative relationship with FCF. The study of Shah et al. (2004) also predicted a negative result that growth will attract more leverage which will cause a decline in FCF. However, our results contradict the study of Khan et al. (2012), which says that the more growth opportunities a firm has, the more FCF it will carry to finance its projects.

There is a positive relationship between FCF and tangible assets. Our results are consistent with the studies of Hillier, Ross, Westerfield, Jaffe, and Jordan (2019) and Skoogh and Swärd (2015) that tangible assets are easy to value, and there is less information asymmetry, so the managers raise equity without sending a negative signal to the market. So, the more tangible assets, the more FCF a firm will store. In their studies, as per pecking order theory, the firm must be less levered to increase the FCF. The studies of Afza and Hussain (2011), Mugetha (2019), and Kadioglu and Yilmaz (2017) also supported our findings. They believed that high tangibility increases firm performance and earns a good amount of FCF. However, the study of Shah et al. (2004) was contrary in that by increasing the tangibility, leverage also increases, which erodes FCF.

Column 2 describes 2nd model of the study; Trade-off theory

As per our results, there is a significant negative relation between FCF and tax. Given the reason, as per trade-off theory, a firm has the advantage of using debt and taking advantage of the tax shield. With more leverage, FCF grins down due to interest and principal payments. The study of Serrasqueiro et al. (2016) suggested the same results. The findings of Afza and Hussain (2011) also indicate that leverage and taxes are positively related, which makes the relationship negative with FCF. Barakat and Rao (2003), and Lei (2020) study indicated the same results. Six control variables show nearly the same relationship as for model one.

Column 3 describes 3rd model of the study; Pecking Order Theory

According to our findings, the relationship between FCF and retention is positive. When a company does not pay dividends and keeps earnings for future investment, its FCF rises. Skoogh and Swärd (2015) and Serrasqueiro et al. (2016) found that highly profitable firms can retain more profits for future investments. The six control variables have nearly the same relationship as model one.

Column 4 depicts Shyam and Sunder's deficit model for pecking order theory.   Funds flow deficit; Shyam and Sunder 1999

$$D_{it} = \alpha_{it} + \alpha_1 DEF_{it} + \varepsilon \qquad (5)$$

Where D_{it} is the new amount of debt issued, DEF is the internal flow deficit, i.e., the external amount required to pay the loan, financial investment, and loan repayment. ε is the error term. The study tested the pecking order theory using Shyam and Sunder's 1999 deficit

model, and the results were significantly negative. The values were determined using a dummy variable, with 0 indicating a deficit and 1 indicating a surplus. The study found a significant negative relationship; deficit supported the theory that firms with deficits have low FCF. Six control variables show nearly the same relationship as for model one.
Column 5 describes 4th model of the study for all variables

The study put all the variables in one model in the fifth column, and the results were still consistent with the theories. The dividend was removed from the model due to a multi-collinearity issue with the business's retention ratio. The six control variables have a remarkably similar relationship to model one.

Table 7
Regression Analysis

VARIABLES	(1) FCF Agency Theory	(2) FCF Trade-off Theory	(3) FCF Pecking order Theory	(4) FCF Deficit Model (Shyam and Sunder)	(5) FCF Full Model
LEV	-0.0180***				-0.0154***
	(0.00523)				(0.00528)
DPR	-0.0998***	-0.0754***		-0.0778***	
	(0.00501)	(0.00728)		(0.00406)	
SD_OCF	7.98e-10	7.19e-10	7.28e-10	2.87e-10	4.28e-10
	(5.48e-10)	(5.47e-10)	(5.49e-10)	(4.01e-10)	(5.42e-10)
ROA	0.752***	0.776***	0.781***	0.648***	0.715***
	(0.0101)	(0.0119)	(0.0119)	(0.0103)	(0.0106)
SIZE	-0.00423***	-0.00395***	-0.00399***	-0.00226***	-0.00301***
	(0.000821)	(0.000870)	(0.000872)	(0.000676)	(0.000832)
GRO	-0.00435	-0.00451	-0.00446	-0.00318	-0.00135
	(0.00273)	(0.00289)	(0.00289)	(0.00218)	(0.00273)
TANG	0.0207***	0.0130***	0.0132***	0.0314***	0.0294***
	(0.00470)	(0.00500)	(0.00501)	(0.00389)	(0.00481)
ETR		-0.00189***			-0.00232***
		(0.000521)			(0.000587)
RET			0.0741***		0.0907***
			(0.00731)		(0.00506)
Def_d				-0.0745***	-0.0554***
				(0.0161)	(0.00481)
Constant	0.0727***	0.0579***	-0.0176	0.106***	0.0130
	(0.0122)	(0.0129)	(0.0156)	(0.0187)	(0.0139)
Observations	2,737	2,737	2,737	2,737	2,737
R-squared	0.676	0.616	0.615	0.595	0.651

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Note: FCF is free cash flow calculated by dividing operating income before depreciation by total assets, LEV is leverage calculated by dividing Total liabilities by total assets, RET is retention ratio calculated by 1 minus payout ratio, ETR is the effective tax rate calculated by tax expense by pre-tax income, DPR is dividend payout- values are directly extracted from financial statements, PROF is profitability calculated by Return on Assets minus earnings before interest and tax by total assets, Size is calculated by taking the logarithm of total assets, TANG is asset tangibility and is calculated by SD of operating assets, GRO is growth and is calculated by the percentage change in total assets, SD-OCF is cashflow volatility and is calculated by taking SD of operating cash flow. References of authors for these calculations are given in table 3.1.

5. Conclusion
5.1. Conclusion

This study aimed to analyze FCF theories in the non-financial sector of Pakistan. FCF is determined by three theories, i.e., Agency theory, trade-off theory, and pecking order theory. Agency theory views managers holding more FCF to increase the number of resources under control. Trade-off theory views firms gradually moving toward their optimal debt level to take

maximum advantage of the tax shield. Pecking order theory views a firm following a hierarchy in financing a project. The study ran three regression models for each theory, Shyam-Sunder and Myers (1999) model for deficit and a full model for all theories. Still, the results were consistent with individual theories.

A dependent variable (FCF), three independent variables (Leverage, effective tax rate, and retention), and six control variables (Size, growth, tangibility, operating cash flows, Profitability, and dividend) are used in the study. The data was for 488 firms for twenty years, i.e., from 2001 to 2020.

In the first model, the relation of leverage with FCF is negative, which is consistent with agency theory. In the second model, the tax rate negatively affects FCF, consistent with the trade-off theory that firms take more leverage for a tax shield. In the third model, retention is positively related to FCF, which is consistent with the pecking order theory that the more the firm retains, the more FCF the firm will have. Shyam-Sunder and Myers (1999) model was consistent with the study that firms with funds deficit will have less FCF. In the last column, the results were consistent after putting all the variables in a single model.

5.2. Practical and Theoretical Implication of the Study

The results of this investigation carry significant theoretical implications, illuminating the nuances of prevailing free cash flow theories and their relevance within the distinctive landscape of the non-financial sector in Pakistan. Through a detailed exploration of these theoretical intricacies, our study enriches the theoretical underpinnings of financial management

The practical implications of our results extend to financial managers and policymakers, offering valuable insights into the intricacies of free cash flow within the distinct context of non-financial firms listed on the PSX. This analysis has the potential to guide strategic decision-making processes, thereby enhancing the overall financial well-being and stability of these entities.

5.3. Future Research Suggestions

This study can be improved and searched further in many ways. First is the inclusion of the financial sector in the study. Second, to analyze the use of FCF compared with the financial and non-financial sectors. The third would be giving ownership to managers in the firm. Data would be a hindrance, but hope will be available for future researchers. Fourth is why the managers tend to invest FCF in negative projects and the uses of FCF in Pakistan firms. I propose that future scholars conduct an analysis of FCF in this regard. Additionally, enhancing this study could involve incorporating the financial sector for a more comprehensive analysis. Further investigation could explore the comparative use of Free Cash Flow (FCF) within both financial and non-financial sectors. Another avenue for improvement is examining the impact of managerial ownership on FCF allocation. Despite potential data challenges, future researchers could explore these aspects. Additionally, investigating why managers might choose to invest FCF in negative projects and exploring diverse uses of FCF within Pakistani firms would offer valuable insights for future scholarly analysis.

Authors Contribution

Qiyanoos Khan: Refining the research idea, delineating the scope, and shaping the methodology for the study.
Waqar: Responsible for crafting both the introduction and the data and methodology sections of the research.
Manzar Zia: Comprehensive review of the existing literature pertaining to intellectual capital disclosure.

Muhammad Afraz Abdur Rehman: Provided valuable oversight and supervision throughout the research process.

Conflict of Interests/Disclosures
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References

Afza, T., & Hussain, A. (2011). Determinants of capital structure across selected manufacturing sectors of Pakistan.

Almeida, H., & Campello, M. (2007). Financial constraints, asset tangibility, and corporate investment. *The Review of Financial Studies, 20*(5), 1429-1460. doi:https://doi.org/10.1093/rfs/hhm019

Astami, E. W., Rusmin, R., Hartadi, B., & Evans, J. (2017). The role of audit quality and culture influence on earnings management in companies with excessive free cash flow: Evidence from the Asia-Pacific region. *International Journal of Accounting & Information Management, 25*(1), 21-42. doi:https://doi.org/10.1108/IJAIM-05-2016-0059

Atiyet, B. A. (2012). The pecking order theory and the static trade off theory: comparison of the alternative explanatory power in French Firms. *Journal of Business Studies Quarterly, 4*(1), 1.

Barakat, M.-H., & Rao, R.-P. (2003). The role of taxes in capital structure: Evidence from taxed and non-taxed Arab economies.

Bhundia, A. (2012). A comparative study between free cash flows and earnings management. *Business Intelligence Journal, 5*(1), 123-129.

Bontempi, M. E. (2002). The dynamic specification of the modified pecking order theory: its relevance to Italy. *Empirical Economics, 27*, 1-22. doi:https://doi.org/10.1007/s181-002-8356-9

Bukit, R. B., & Nasution, F. N. (2015). Employee diff, free cash flow, corporate governance and earnings management. *Procedia-Social and Behavioral Sciences, 211*(11), 585-594. doi:https://doi.org/10.1016/j.sbspro.2015.11.077

Buus, T. (2015). A general free cash flow theory of capital structure. *Journal of Business Economics and Management, 16*(3), 675-695. doi:https://doi.org/10.3846/16111699.2013.770787

Byrd, J. W. (2010). Financial policies and the agency costs of free cash flow: Evidence from the oil industry. *Available at SSRN 1664654*. doi:https://doi.org/10.2139/ssrn.1664654

Cahyani, W. B., & Alliyah, S. (2019). PENGARUH FREE CASH FLOW, LEVERAGE, KOMPOSISI DEWAN KOMISARIS DAN KEPEMILIKAN INSTITUSIONAL TERHADAP MANAJEMEN LABA (Studi pada Perusahaan Perbankan yang Go Public di Bursa Efek Indonesia). *Jurnal Akuntansi & Bisnis, 5*(01). doi:https://doi.org/10.47686/jab.v5i01.256

Cardoso, F. T., Martinez, A. L., & Teixeira, A. J. (2014). Free cash flow and earnings management in Brazil: The negative side of financial slack. *Global Journal of Management and Business Research, 14*(1), 84-96.

Carpenter, R. E. (1994). Finance constraints or free cash flow? The impact of asymmetric information on investment. *Unpublished Working Paper, Emory University*.

Carroll, C., & Griffith, J. M. (2001). Free cash flow, leverage, and investment opportunities. *Quarterly Journal of Business and Economics, 40*(3/4), 141-153.

De Jong, A., Kabir, R., & Nguyen, T. T. (2008). Capital structure around the world: The roles of firm-and country-specific determinants. *Journal of banking & Finance, 32*(9), 1954-1969. doi:https://doi.org/10.1016/j.jbankfin.2007.12.034

Dhumale, R. (1998). Earnings retention as a specification mechanism in logistic bankruptcy models: A test of the free cash flow theory. *Journal of Business Finance & Accounting, 25*(7-8), 1005-1023. doi:https://doi.org/10.1111/1468-5957.00223

Dial, J., & Murphy, K. J. (1995). Incentives, downsizing, and value creation at General Dynamics. *Journal of financial economics, 37*(3), 261-314. doi:https://doi.org/10.1016/0304-405X(94)00803-9

Duggal, R., & Millar, J. A. (1994). Institutional investors, antitakeover defenses and success of hostile takeover bids. *The Quarterly Review of Economics and Finance, 34*(4), 387-402. doi:https://doi.org/10.1016/1062-9769(94)90022-1

Fama, E. F., & French, K. R. (1989). Business conditions and expected returns on stocks and bonds. *Journal of financial economics, 25*(1), 23-49. doi:https://doi.org/10.1016/0304-405X(89)90095-0

Fatma, B. M., & Chichti, J. (2011). Interactions between free cash flow, debt policy and structure of governance: Three stage least square simultaneous model approach. *Journal of Management Research, 3*(2), 1-34.

Fox, I., & Marcus, A. (1992). The causes and consequences of leveraged management buyouts. *Academy of Management Review, 17*(1), 62-85. doi:https://doi.org/10.5465/amr.1992.4279571

Frank, M. Z., & Goyal, V. K. (2003). Testing the pecking order theory of capital structure. *Journal of financial economics, 67*(2), 217-248.

Gul, F. A., & Tsui, J. S. L. (1997). A test of the free cash flow and debt monitoring hypotheses:: Evidence from audit pricing. *Journal of Accounting and Economics, 24*(2), 219-237. doi:https://doi.org/10.1016/S0165-4101(98)00006-8

Harbula, P. (2001). The free cash-flow theory versus financial constraints, investments, corporate governance and soft budgeting problems. *Acta oeconomica, 51*(4), 489-512. doi:https://doi.org/10.1556/aoecon.51.2000-2001.4.3

Hillier, D., Ross, S., Westerfield, R., Jaffe, J., & Jordan, B. (2019). *EBOOK: Corporate Finance, 4e*: McGraw Hill.

Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *The American economic review, 76*(2), 323-329.

Jensen, M. C. (1987). *The free cash flow theory of takeovers: A financial perspective on mergers and acquisitions and the economy.* Paper presented at the Proceedings of a conference sponsored by Federal Reserve Bank of Boston.

Kadioglu, E., & Yilmaz, E. A. (2017). Is the free cash flow hypothesis valid in Turkey? *Borsa Istanbul Review, 17*(2), 111-116. doi:https://doi.org/10.1016/j.bir.2016.12.001

Kafayat, A., Rehman, K. U., & Farooq, M. (2014). Factors effecting corporate cash holding of non-financial firms in Pakistan. *Acta Universitatis Danubius. Œconomica, 10*(3).

Kamran, M. R., Zhao, Z., & Ambreen, S. (2017). Free cash flow impact on firm's profitability: An empirical indication of firms listed in KSE, Pakistan. *European Online Journal of Natural and Social Sciences, 6*(1), pp. 146-157.

Kaplan, S. (1989). Management buyouts: Evidence on taxes as a source of value. *The Journal of finance, 44*(3), 611-632. doi:https://doi.org/10.1111/j.1540-6261.1989.tb04381.x

Kauer, R. T., & Silvers, J. (1991). Hospital free cash flow. *Health Care Management Review*, 67-77.

Khan, A., Kaleem, A., Nazir, M. S., & Khan, K. (2012). Voluntarily contribution and agency cost of free cash flow: Evidence from manufacturing sector of Pakistan. *Journal of Basic and Applied Scientific Research, 2*(7), 6882-6888.

Khidmat, W. B., & Rehman, M. U. (2014). The impact of free cash flows and agency costs on firm performance—An empirical analysis of KSE listed companies of Pakistan. *Journal of Financial Engineering, 1*(03), 1450027. doi:https://doi.org/10.1142/S2345768614500275

Khoa, B. T., & Thai, D. T. (2021). Capital structure and trade-off theory: Evidence from Vietnam. *The Journal of Asian Finance, Economics and Business, 8*(1), 45-52.

Kvint, V. (2010). *The global emerging market: Strategic management and economics*: Routledge.

Laiho, T. (2011). Agency theory and ownership structure-Estimating the effect of ownership structure on firm performance.

Lehn, K., & Poulsen, A. (1989). Free cash flow and stockholder gains in going private transactions. *The Journal of finance, 44*(3), 771-787. doi:https://doi.org/10.1111/j.1540-6261.1989.tb04390.x

Lei, L. (2020). Research on the impact of tax shield effect on corporate capital structure—empirical analysis based on a-share listed companies. *Modern Economy, 11*(1), 126-139. doi:https://doi.org/10.4236/me.2020.111012

Mahadwartha, P. A., & Ismiyanti, F. (2008). Debt policy, free cash flow hypothesis, and balancing of agency theory through ownership: Evidence from Indonesia. *Corporate Ownership and Control, 5*(2), 256-263.

Manos, R., Green, C. J., & Murinde, V. (2004). *Business Group and Capital Structure: Evidence from Indian Firms*: College of Management, Academic Studies, School of Business Administration ….

Marsh, P. (1982). The choice between equity and debt: An empirical study. *The Journal of finance, 37*(1), 121-144. doi:https://doi.org/10.1111/j.1540-6261.1982.tb01099.x

Mugetha, I. A. (2019). Effect of liquidity on financial performance of listed firms in the Nairobi securities exchange. *African Journal of Emerging Issues, 1*(5), 74-93.

Nadir, M., Alam, S., Ali, M., & Rahim, F. R. (2023). *Financial Literacy as a Supporting Factor for Sustainability MSMEs in Samarinda City.* Paper presented at the 7th International Conference on Accounting, Management and Economics (ICAME-7 2022).

Nekhili, M., Amar, I. F. B., Chtioui, T., & Lakhal, F. (2016). Free cash flow and earnings management: The moderating role of governance and ownership. *The Journal of Applied Business Research, 32*(1), 255-268.

Oprea, R. (2008). Free cash flow and takeover threats: an experimental study. *Southern Economic Journal, 75*(2), 351-366.

Serrasqueiro, Z., & Caetano, A. (2015). Trade-Off Theory versus Pecking Order Theory: capital structure decisions in a peripheral region of Portugal. *Journal of Business Economics and Management, 16*(2), 445-466. doi:https://doi.org/10.3846/16111699.2012.744344

Serrasqueiro, Z., Nunes, P. M., & da Rocha Armada, M. (2016). Capital structure decisions: old issues, new insights from high-tech small-and medium-sized enterprises. *The European Journal of Finance, 22*(1), 59-79. doi:https://doi.org/10.1080/1351847X.2014.946068

Shah, A., Hijazi, T., & Javed, A. Y. (2004). The determinants of capital structure of stock exchange-listed non-financial firms in Pakistan [with comments]. *The Pakistan Development Review, 43*(4), 605-618.

Shyam-Sunder, L., & Myers, S. C. (1999). Testing static tradeoff against pecking order models of capital structure. *Journal of financial economics, 51*(2), 219-244. doi:https://doi.org/10.1016/S0304-405X(98)00051-8

Skoogh, J., & Swärd, P. (2015). The Impact of Tangible Assets on Capital Structure-An analysis of Swedish listed companies.

Smith, A. (2002). An Inquiry into the Nature and Causes of the Wealth of Nations. *Readings in economic sociology*, 6-17. doi:https://doi.org/10.1002/9780470755679

Tahir, M. S., Alifiah, M. N., Arshad, M. U., & Saleem, F. (2016). Financial theories with a focus on corporate cash holding behavior: A comprehensive review. *International Journal of Economics and Financial Issues, 6*(3), 215-219.

Titman, S., & Wessels, R. (1988). The determinants of capital structure choice. *The Journal of finance, 43*(1), 1-19. doi:https://doi.org/10.1111/j.1540-6261.1988.tb02585.x

Tong, G., & Green, C. J. (2005). Pecking order or trade-off hypothesis? Evidence on the capital structure of Chinese companies. *Applied economics, 37*(19), 2179-2189. doi:https://doi.org/10.1080/00036840500319873

Toumeh, A. A., & Yahya, S. (2017). Stock market segmentations, free cash flow and earnings management: The roles of moderating independent audit committee and audit quality (The case of Jordan from an agency theory perspective). *Global Business and Management Research, 9*(4), 1-16.

Vanacker, T. R., & Manigart, S. (2010). Pecking order and debt capacity considerations for high-growth companies seeking financing. *Small Business Economics, 35*, 53-69. doi:https://doi.org/10.1007/s11187-008-9150-x

Wang, C. S., Strong, N., Tung, S., & Lin, S. (2009). Share repurchases, the clustering problem, and the free cash flow hypothesis. *Financial Management, 38*(3), 487-505. doi:https://doi.org/10.1111/j.1755-053X.2009.01045.x

Wang, G. Y. (2010). The impacts of free cash flows and agency costs on firm performance. *Journal of service science and management, 3*(04), 408.

Yousaf, I., Ali, S., & Hasan, A. (2019). Effect of family control on corporate financing decisions of firms: evidence from Pakistan. *Estudios de economía aplicada, 37*(3), 155-170.

Zhang, Y. (2009). Are debt and incentive compensation substitutes in controlling the free cash flow agency problem? *Financial Management, 38*(3), 507-541. doi:https://doi.org/10.1111/j.1755-053X.2009.01046.x