

Agency Costs of Free Cash Flow and Takeover Attempts

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This study utilises two proxies of free cash flow, excess cash holdings and excess accounting cash flow, to investigate the relevance of Jensen's (1986) free cash flow theory to the market for corporate control in Australia. Specifically, based on a sample of 6,062 firm-years between 1993 and 2000, this study tests the relationship between the level of excess cash and the likelihood of a takeover attempt. Results from the flow measure of excess cash, which is closer to Jensen's definition of free cash flow, indicate that firms possessing high levels of excess accounting cash flow are more likely to make takeovers attempts, consistent with Jensen's (1986) free cash flow hypothesis.

Field of Research: cash holdings, takeover, acquisition, free cash flow

1. Introduction

The agency costs of free cash flow proposed by Jensen (1986) suggest that when managers have more cash than is needed to fund all positive NPV projects (i.e., free cash flow), there is an incentive for managers to waste the excess cash on unprofitable investments such as acquisitions. In other words, according to the free cash flow theory, firms with free cash flow are more likely to engage in value-decreasing takeovers. Thus, this study tests if firms with higher excess cash are more likely to make takeover attempts.

Overall, our test of free cash flow hypothesis in the Australian takeover market provides evidence supporting the free cash flow theory of takeover, consistent with Harford's (1999) findings. Specifically, we find that the likelihood of a takeover attempt is higher for firms with excess accounting cash flow, which is based on the cash flow from operations.

One contribution made by this study is that in addition to the measure of excess cash holdings used in Harford's (1999) study, this study measures the level of excess cash flow, which is closer to Jensen's definition of free cash flow than the measures used in previous studies. For example, Lang, Stulz and Walkling (1991) use the ratio of cash flow to assets for low q firms as the proxy for free cash flow instead of measuring the level of "excess" cash directly. However, there is one problem with their measure as suggested by Harford (1999) who argues that Lang et al.'s (1991) measure does not

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control for the level of “normal” cash in different companies.

This study continues as follows. In section 2, we review the literature on the free cash flow hypothesis and acquisitions and we outline the hypothesis tested in this study. Data are described in Section 3. Section 4 presents the methods and section 5 presents the results from the test on the relationship between the likelihood of a takeover attempt and the level of excess cash. Concluding remarks and areas for future research are offered in the last section.

2. Literature Review

This section reviews the free cash flow hypothesis in the context of the market for corporate control. Jensen (1986) suggests that in the presence of large free cash flow, the agency conflicts between managers and shareholders become more severe (that is, the free cash flow hypothesis). This is because retaining excess cash flow reduces the ongoing need for raising finance from the capital markets, thereby giving managers the freedom from capital providers’ monitoring. However, from shareholders’ point of view, they would prefer this cash to be distributed back to them through dividends or share repurchase programs if firms have limited growth potential and the cash could not be better invested elsewhere.

2.1 Empirical Evidence Supporting the Free Cash Flow Theory

Based on a sample of US firms over the period 1950-1994, Harford (1999) reports that cash rich firms are more likely to make takeover attempts and carry out diversifying acquisitions. Not only the cash rich acquirers are found to have negative share-market returns at the takeover announcement period but the combined firms have poor operating performance.

Schwetzler and Reimund (2004) examine the cash holdings of German firms. They determine firms’ excess cash holdings using Fama-MacBeth regression residuals. Firms whose residuals are in the fourth quartile are considered to have excess cash holdings. Consistent with the free cash flow hypothesis, they find that compared to a sample of firms matched on industry and firm size, firms with persistent excess corporate cash holdings over a three-year period have significantly lower operating performance, proxied by the operating cash flow.

2.2 Empirical Evidence Against the Free Cash Flow Theory

The Myers and Majluf (1984) model argues that due to the asymmetric information problem between managers and investors in the capital market, equity issuance is costly to firms. As a result, firms that anticipate future positive NPV projects will build up their cash levels to avoid underinvestment. This theory is in direct contrast to the free cash flow theory, which predicts that firms with free cash flow will waste it on managerial perquisites or unprofitable projects.

Mikkelson and Partch (2002) examine the operating performance and characteristics of high cash firms, defined as firms that hold more than 25% of their total assets in cash and cash equivalents at the end of each fiscal year and whose cash ratios do not fall by more than one-third for the entire sample period. They find that the operating

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performance of high cash firms is about 1.5 times higher than the performance of benchmark firms.

Gregory (2005) tests the free cash flow hypothesis by examining the long-run abnormal performance of UK acquirers and finds evidence against Jensen's (1986) free cash flow hypothesis. Gregory (2005) finds that acquirers with high free cash flow outperform acquirers with low free cash flow. A positive relationship is also reported between the cash flow and long-run performance of acquirers over a 60-month period. Gregory (2005) shows that his results are robust to the long-run performance measures and the proxies used for investment opportunities set.

A more recent paper by Gao (2011) that examines the corporate cash reserves of bidders and their announcement returns also finds evidence against the free cash flow theory. Specifically, bidders with high excess cash reserves operationally outperform bidders with low excess cash reserves.

Overall, previous studies have reported mixed findings for the free cash flow hypothesis. Thus, based on a sample of Australian listed companies over the fiscal years 1993-2000, this study tests if firms with substantial free cash flow are more likely to make takeover attempts. This study measures the free cash flow or excess cash in two ways, excess cash holdings and excess accounting cash flow. Thus, the hypotheses tested are as follows:

H1: The level of excess cash holdings is positively related to the likelihood of a takeover attempt.

H2: The level of excess accounting cash flow is positively related to the likelihood of a takeover attempt.

3. Data

The takeover data are obtained from the SDC Platinum database between fiscal years 1993 to 2000. The accounting and prior share-market performance of each sample firm are measured as of the most recent reporting date prior to the takeover announcement date. The accounting data are obtained from the Aspect Financial database, and the monthly share return data used to calculate prior share-market performance are collected from the Share Price & Price Relative Database (SPPR). After excluding firms with missing data, the final sample includes 6,062 firm-years.

4. Methodology

To test the relationship between takeover attempts and the level of excess cash, we posit that the probability of a firm making a takeover announcement is positively related to the firm's level of excess cash. The event examined here is thus the probability of a firm making a takeover announcement, and we employ a binary logit probability model, which has the general form:

$$P_{it} = \frac{1}{(1 + e^{-\beta X_{it}})} \quad (1)$$

where P_{it} is the probability that firm i makes at least one takeover announcement in

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period t , β is the vector of slope coefficients and X_{it} is a vector of independent variables. All independent variables are measured at the most recent fiscal year-end prior to the acquisition announcements.

The following defines the variables used in the test of the relationship between the likelihood of a takeover attempt and the level of excess cash:

- **Probability of a takeover attempt** is the dependent variable and is equal to one if a takeover attempt is made by a firm in year t and zero otherwise
- **Excess cash** is measured in two ways. One is based on the cash holdings and the other is based on the accounting cash flow, which is defined as the ratio of earnings after interest paid, tax paid and dividend paid but before depreciation to total assets. Thus, in contrast to previous studies that only consider either measure, this study by using both measures can provide more complete tests of the free cash flow hypothesis. Excess cash is defined as the difference between the firm's cash holdings (or accounting cash flow) and the average value predicted for its industry, measured at the end of year $t-1$. The later value is estimated using a cash normal model as outlined in Table 1.
- **TD_a** is measured as the ratio of total debt to total assets at the end of year $t-1$.
- **SIZE** is measured as the natural log of total assets in 1990 prices at the end of year $t-1$. The consumer price index serves as the deflator.
- **MV/BV** is measured as the ratio of book value of total assets minus the book value of equity plus the market value of equity to book value of assets at the end of year $t-1$.
- **Return on equity (ROE)** is measured as the ratio of net income to shareholder equity average over years $t-2$ through $t-1$.
- **Sales growth** is calculated as the percentage change in sales over years $t-2$ through $t-1$.
- **Past share-market performance** is calculated as the cumulative raw returns minus the equal weighted decile returns over the most recent fiscal year prior to the year of takeover. Both sales growth rate and past stock performance are proxies for prior performance.
- **Industry dummies for resources, industrials, consumer, telecommunications and biotechnology industries** are included in the logistic regression model to take into account the fact that company characteristics may differ systematically from industry to industry.¹

Table 1: Specification of the cash normal model

This table shows the dependent and independent variables used in the pooled time-series cross-sectional regression analysis for two different measures of cash. CASH is the cash holdings, defined as the ratio of cash and short-term deposits deflated by total assets. ACCCF is the accounting cash flow, defined as the ratio of earnings after interest paid, tax paid and dividend paid but before depreciation to total assets. TD_a is the ratio of total debt to total assets. Capex_a is the ratio of capital expenditures to total assets. NWC_a is the ratio of net working capital excluding cash to total assets. SIZE is the natural log of total assets in 1990 prices. MV/BV is the ratio of book value of total assets minus the book value of equity plus the market value of equity to book value of assets. VARCASH is calculated as the difference between the max and min values of CASH divided by the mean over a six year period which includes two years prior to and three years after the sample year plus the sample year itself. VARACCCF is the difference between the max and min values of ACCCF divided by the mean over a six year period which includes two years prior to and three years after the sample year plus the sample year itself. YD refers to year dummy variables.

Cash Normal Model		
Variables	Model 1	Model 2
Dependent	CASH _{it}	ACCCF _{it}
Independent	TD_a _{it}	TD_a _{it}
	Capex_a _{it}	Capex_a _{it}
	NWC_a _{it}	NWC_a _{it}
	SIZE _{it}	SIZE _{it}
	MV/BV _{it}	MV/BV _{it}
	VARCASH _{it}	VARACCCF _{it}
	YD93	YD93
	YD94	YD94
	YD95	YD95
	YD96	YD96
	YD97	YD97
	YD98	YD98
	YD99	YD99

5. Results

5.1 Univariate Results

Table 2 shows the summary statistics of financial and firm characteristics of bidding firms and the rest of sample firms. One thing to note from the Table is that bidding firms have significantly lower median level of excess cash holdings but significantly higher excess accounting cash flow than the rest of sample firms. Thus, the flow measure of cash provides evidence consistent with the prediction of Jensen's (1986) free cash flow hypothesis that firms with more free cash flow are more likely to carry out takeovers.

Moreover, we find that bidding firms have significantly larger median firm size than the rest of sample firms, suggesting that large firms have more resources available to engage in takeover activities. The median market-to-book ratio of bidding firms is also significantly larger than that of the rest of sample firms, suggesting that growth could be the motivation for carrying out acquisitions. Finally, bidding firms are found to have significantly higher median prior share-market returns, ROE and sales growth than the rest of sample firms, indicating that bidding firms have better prior firm performance and may in fact have better managers who are more likely to take up positive NPV projects.

Table 3 presents the deal characteristics of takeover bids over fiscal years 1993 to 2000. Panel A shows that of the 956 bidders, 80.5% of the firms (or 770 firms) are

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single bidders while 19.5% of the firms (or 186 firms) make at least two takeover announcements in the year of acquisition. Panel C shows that for the full sample, 90.8% are friendly acquisitions and 3.1% are hostile.

In Panel D, the bids are classified according to the method of payment. Jensen (1986) suggests that firms with large amounts of free cash flow tend to finance their acquisitions with cash. Panel D indicates that an overwhelming majority of bids, 48.7%, involve cash financing. Similar findings have also been reported by da Silva Rosa et al. (2000); based on a sample of 240 Australian takeover bids from 1988 to 1996, they find that 55% of takeover bids in 1996 are financed by cash.

To measure the degree of diversification, we use the two-digit Standard Industry Classification (SIC) codes to determine the relatedness of business segments between bidders and targets. Accordingly, an acquisition is defined as “focused” when both the bidder and the target have the same two-digit SIC code, and an acquisition is defined as “diversifying” when the two-digit SIC code of the bidder does not match the two-digit SIC code of the target. Panel E of Table 3 shows that of the total 1,297 bids, 49.7% are focused bids.

Table 2: Summary statistics for bidders and the rest of sample firms

The table presents the mean, median and standard deviation values of the financial variables for bidders and the rest of the sample firms over fiscal years 1993 to 2000, and Wilcoxon rank-sum test is used to test for any significant differences in variable median values. Excash is defined as the difference between the firm's ratio of cash holdings to total assets and the average value predicted for its industry. Exaccf is defined as the difference between the firm's ratio of accounting cash flow to total assets and the average value predicted for its industry. TD_a is the ratio of total debt to total assets. SIZE is the natural log of total assets in 1990 prices. MV/BV is the ratio of book value of total assets minus the book value of equity plus the market value of equity to book value of assets. ROE is measured as the ratio of net income to average shareholder equity. Sales growth is calculated as the percentage change in sales. Prior return is calculated as the cumulative raw returns minus the equal weighted decile returns over the most recent fiscal year prior to the year of takeover. Numbers in parentheses are p-values (2-tailed). *** denotes significance at the 1% level (2-sided); ** denotes significance at the 5% level (2-sided); * denotes significance at the 10% level (2-sided).

Variable	Bidding firms			The rest of sample firms			Z test for diff. in median values	
	Mean	Median	Std. Dev	Mean	Median	Std. Dev		
Excash	-0.045	-0.065	0.204	-0.015	-0.063	0.226	-2.545	**
							(0.011)	
Exaccf	0.036	0.028	0.236	-0.021	0.007	0.415	7.176	***
							(0.000)	
TD_a	0.178	0.159	0.177	0.144	0.082	0.169	7.862	***
							(0.000)	
SIZE	13.579	13.477	2.281	12.306	12.067	2.088	16.146	***
							(0.000)	
MV/BV	1.908	1.292	6.895	1.892	1.183	3.769	3.976	***
							(0.000)	
ROE	-0.010	0.024	0.248	-0.059	0.001	1.005	11.561	***
							(0.000)	
Sales growth	2.028	0.106	15.128	2.472	0.051	15.494	4.833	***
							(0.000)	
Prior returns	0.146	-0.017	1.225	0.019	-0.144	1.048	6.790	***
							(0.000)	
No. of firms	956			5106				

Table 3: Summary statistics for deal characteristics

The table presents the summary statistics for 956 bidders and 1,297 bids identified from the SDC Platinum database for fiscal years 1993 to 2000. A firm is defined to have made multiple acquisitions if it makes at least two takeover announcements in the year of acquisition. An acquisition is defined as "completed" if the transaction has been closed, as "withdrawn" if the target or acquirer in the transaction has terminated its agreement (or letter of intent or plan) for the acquisition or merger and as "intended" if the acquirer has announced that they propose or expect to make an acquisition. An acquisition is defined as "hostile" if the board of the target officially rejects the offer but the acquirer persists with the takeover, as "friendly" if the target board recommends the offer and as "neutral" if the management of the target has nothing to do with the transaction. Cash financing includes cash, debt and liabilities or any of these combinations; common stock financing include common stock, options and warrants and any of these combinations; hybrid financing include any combination of cash, common stock, options, warrants, convertible securities and preferred stock. An acquisition is defined as "focused" when both the bidder and the target have the same two-digit SIC code and as "diversifying" when the two-digit SIC code of the bidder does not match the two-digit SIC code of the target. The transaction value (\$ million) is the total value of consideration paid by the acquirer, excluding fees and expenses.

Panel A: Number	No. of bidders	% of bidders
Total no. of bidders	956	
Total no. of bids	1297	
No. of firms making single acquisitions	770	80.5
No. of firms making multiple acquisitions	186	19.5
No. of firms making 2 acquisitions	173	18.1
No. of firms making 3 acquisitions	39	4.1
No. of firms making 4 acquisitions	16	1.7
No. of firms making 5 acquisitions	4	0.4
No. of firms making 6 acquisitions	4	0.4
No. of firms making 7 acquisitions	1	0.1

Panel B: Deal status	No. of bids	% of bids
Completed	967	74.6
Withdrawn	88	6.8
Intended	242	18.7
Total	1297	

Panel C: Deal attitude	No. of bids	% of bids
Friendly	1178	90.8
Hostile	40	3.1
Neutral	79	6.1
Total	1297	

Panel D: Method of payment	No. of bids	% of bids
Cash	632	48.7
Common stock	145	11.2
Hybrid	143	11.0
Unspecified	377	29.1
Total	1297	

Panel E: Focused vs. diversifying acquisitions	No. of bids	% of bids
Focused acquisition	652	49.7
Diversification	645	50.3
Total	1297	

Panel F: Value of transactions	(\$mil)
Mean	40.38
Median	7.96
Max	1659.13
Min	0.04
Std. Deviation	115.10

5.2 Multivariate Results

This section examines the relationship between free cash flow, measured by excess cash holdings and excess accounting cash flow, and the likelihood of a takeover. Table 4 presents the estimation results from logistic regression models where the free cash flow is measured by excess cash holdings.

Several important results are observed in Table 4. First, the excess cash holdings (or Excash) variable has a negative sign in all models, contrary to the prediction of the free cash flow hypothesis. Therefore, the first hypothesis is rejected. This finding also contradicts with the findings in Harford (1999) who finds that the probability of being a bidder increases with the level of excess cash², which is similar to the variable, excess cash holdings, used in this study.

Second, the leverage ratio, ROE, and past share-market performance are significant at the 1% level in all models, but the sales growth rate is never significant. The significant positive relationship found between leverage and the likelihood of a takeover attempt is contrary to our expectation that firms with unused debt capacity are more likely to acquire other firms in order to realise the financial synergies by transferring idle capital from bidders to target firms. The positive relationship thus suggests that the transfer of debt capacity may be from the target to the acquiring firm rather than the other way round.

Also, the finding that better prior firm performance is associated with higher likelihood of a takeover attempt is consistent with the prediction of free cash flow theory. According to the free cash flow theory, many acquirers have superior share-market performance prior to acquisitions, which is often associated with high levels of free cash flow to be used for acquisitions (Jensen, 1988).

Table 5 shows the results of logit models where the free cash flow is measured by excess accounting cash flow. For all models in Table 5, the excess accounting cash flow is significantly positive at the 1% level, suggesting that the higher the excess accounting cash flow held by a firm, the greater the probability that a firm will make a takeover attempt. This finding is consistent with the second hypothesis and supports the free cash flow theory.

Table 4: Logistic regression results where excess cash is based on cash holdings

The table presents the results of a logit model on the likelihood of a takeover attempt. The dependent variable is equal to 1 if the firm announces a takeover attempt in a given year and 0 otherwise. The takeover sample, identified from the SDC Platinum database, includes all takeover activities over fiscal years 1993 to 2000. Excash is defined as the difference between the firm's ratio of cash holdings to total assets and the average value predicted for its industry. TD_a is the ratio of total debt to total assets. SIZE is the natural log of total assets in 1990 prices. MV/BV is the ratio of book value of total assets minus the book value of equity plus the market value of equity to book value of assets. ROE is measured as the ratio of net income to average shareholder equity. Sales growth is calculated as the percentage change in sales. Prior return is calculated as the cumulative raw returns minus the equal weighted decile returns over the most recent fiscal year prior to the year of takeover. DUM93, DUM94, DUM95, DUM96, DUM97, DUM98, and DUM99 are dummy variables for fiscal years 1993 to 2000. Dindustrial is the dummy for industrial industry; Dconsumer is the dummy for consumer industry; Dtelecom is the dummy for telecommunications industry and Dbiochem is the dummy for biotech industry. The standard errors are in parentheses. McFadden R^2 is computed as $1 - (\log \text{likelihood at convergence} / \log \text{likelihood with constant term only})$. The Likelihood Ratio is computed as $2 * (\log \text{likelihood at convergence} - \log \text{likelihood with constant term only})$. *** Significant at the 1% level, 2 tail test; ** Significant at the 5% level, 2 tail test; * Significant at the 10% level, 2 tail test.

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
Variable name	Coeff		Coeff		Coeff		Coeff		Coeff		Coeff	
Constant	-2.671	***	-2.006	***	-5.753	***	-2.674	***	-2.713	***	-2.652	***
	(0.163)		(0.068)		(0.279)		(0.163)		(0.162)		(0.162)	
Excash	-0.421	**	-0.354	**			-0.425	**	-0.463	**	-0.385	**
	(0.176)		(0.175)				(0.176)		(0.175)		(0.175)	
TD_a	0.778	***	0.776	***			0.776	***	0.734	***	0.746	***
	(0.214)		(0.211)				(0.214)		(0.212)		(0.214)	
SIZE					0.252	***						
					(0.017)							
MV/BV	0.004		0.004		0.015	**	0.004		0.003		0.006	
	(0.007)		(0.007)		(0.007)		(0.007)		(0.008)		(0.007)	
ROE	0.679	***	0.664	***	0.073		0.677	***			0.711	***
	(0.227)		(0.225)		(0.142)		(0.226)				(0.229)	
Sales growth	-0.001		-0.001		0.000				-0.001		-0.001	
	(0.003)		(0.003)		(0.002)				(0.003)		(0.003)	
Prior return	0.106	***	0.094	***	0.097	***	0.106	***	0.110	***		
	(0.031)		(0.030)		(0.032)		(0.031)		(0.031)			
DUM93	0.248				0.245		0.246		0.270		0.242	
	(0.198)				(0.202)		(0.198)		(0.198)		(0.198)	
DUM94	0.586	***			0.550	***	0.583	***	0.612	***	0.566	***
	(0.185)				(0.188)		(0.185)		(0.185)		(0.185)	
DUM95	0.567	***			0.515	**	0.565	***	0.585	***	0.541	***
	(0.184)				(0.187)		(0.184)		(0.184)		(0.184)	
DUM96	0.589	***			0.527	***	0.586	***	0.612	***	0.572	***
	(0.182)				(0.185)		(0.182)		(0.181)		(0.181)	
DUM97	0.750	***			0.668	***	0.750	***	0.763	***	0.727	***
	(0.178)				(0.181)		(0.178)		(0.177)		(0.178)	
DUM98	0.994	***			0.918	***	0.990	***	1.007	***	0.970	***
	(0.174)				(0.177)		(0.174)		(0.174)		(0.173)	
DUM99	1.029	***			0.956	***	1.027	***	1.035	***	1.012	***
	(0.172)				(0.175)		(0.172)		(0.171)		(0.171)	
Dindustrial	0.209	**	0.224	**	0.210	**	0.212	**	0.241	**	0.226	**
	(0.088)		(0.088)		(0.088)		(0.088)		(0.087)		(0.088)	
Dconsumer	0.510	***	0.529	***	0.384	***	0.513	***	0.547	***	0.517	**
	(0.101)		(0.101)		(0.101)		(0.101)		(0.100)		(0.101)	
Dtelecom	0.459	**	0.521	***	0.505	**	0.459	**	0.448	**	0.477	***
	(0.182)		(0.181)		(0.187)		(0.182)		(0.182)		(0.182)	
Dbiochem	0.027		0.047		0.048		0.027		0.040		0.042	
	(0.179)		(0.178)		(0.181)		(0.179)		(0.179)		(0.179)	
McFadden R^2	3.1		1.78		6.76		3.10		2.86		2.89	
Likelihood ratio	163.9	***	94.30	***	357.12	***	163.57	***	151.02	***	152.88	***
df=	17		10		16		16		16		16	
N	6,062		6,062		6,062		6,062		6,062		6,062	

Table 5: Logistic regression results where excess cash is based on accounting cash flow

The table presents the results of a logit model on the likelihood of a takeover attempt. The dependent variable is equal to 1 if the firm announces a takeover attempt in a given year and 0 otherwise. The takeover sample, identified from the SDC Platinum database, includes all takeover activities over fiscal years 1993 to 2000. Exaccfcf is defined as the difference between the firm's ratio of accounting cash flow to total assets and the average value predicted for its industry. TD_a is the ratio of total debt to total assets. SIZE is the natural log of total assets in 1990 prices. MV/BV is the ratio of book value of total assets minus the book value of equity plus the market value of equity to book value of assets. ROE is measured as the ratio of net income to average shareholder equity. Sales growth is calculated as the percentage change in sales. Prior return is calculated as the cumulative raw returns minus the equal weighted decile returns over the most recent fiscal year prior to the year of takeover. DUM93, DUM94, DUM95, DUM96, DUM97, DUM98, and DUM99 are dummy variables for fiscal years 1993 to 2000. Dindustrial is the dummy for industrial industry; Dconsumer is the dummy for consumer industry; Dtelecom is the dummy for telecommunications industry and Dbitech is the dummy for biotech industry. The standard errors are in parentheses. McFadden R^2 is defined as computed as 1 - (log likelihood at convergence / log likelihood with constant term only). The Likelihood Ratio is computed as $2 \cdot (\log \text{likelihood at convergence} - \log \text{likelihood with constant term only})$. *** denotes significance at the 1% level, 2 tail test; ** denotes significance at the 5% level, 2 tail test; * denotes significance at the 10% level, 2 tail test.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Variable name	Coeffic.	Coeffic.	Coeffic.	Coeffic.	Coeffic.	Coeffic.
Constant	-2.711 *** (0.164)	-2.584 *** (0.161)	-2.025 *** (0.068)	-2.714 *** (0.164)	-2.740 *** (0.164)	-2.693 *** (0.164)
Exaccfcf	0.476 *** (0.137)	0.511 *** (0.139)	0.418 *** (0.136)	0.476 *** (0.137)	0.580 *** (0.133)	0.482 *** (0.137)
TD_a	0.865 *** (0.207)		0.846 *** (0.204)	0.864 *** (0.207)	0.835 *** (0.206)	0.823 *** (0.206)
SIZE						
MV/BV	0.002 (0.007)	0.002 (0.008)	0.003 (0.007)	0.002 (0.007)	0.002 (0.008)	0.005 (0.007)
ROE	0.421 ** (0.205)	0.375 * (0.202)	0.434 ** (0.207)	0.419 ** (0.205)		0.439 ** (0.207)
Sales growth	-0.002 (0.003)	-0.002 (0.003)	-0.001 (0.003)		-0.002 (0.003)	-0.002 (0.003)
Prior return	0.099 *** (0.031)	0.090 *** (0.031)	0.088 *** (0.030)	0.099 *** (0.031)	0.101 *** (0.031)	
DUM93	0.260 (0.199)	0.238 (0.199)		0.257 (0.199)	0.273 (0.200)	0.255 (0.199)
DUM94	0.594 *** (0.186)	0.547 *** (0.186)		0.591 ** (0.186)	0.610 *** (0.186)	0.577 *** (0.186)
DUM95	0.597 *** (0.185)	0.553 *** (0.185)		0.594 *** (0.185)	0.611 *** (0.186)	0.573 *** (0.185)
DUM96	0.611 *** (0.183)	0.574 *** (0.183)		0.608 *** (0.183)	0.628 *** (0.183)	0.595 *** (0.183)
DUM97	0.772 *** (0.179)	0.746 *** (0.179)		0.771 *** (0.179)	0.784 *** (0.179)	0.752 *** (0.179)
DUM98	1.022 *** (0.176)	1.002 *** (0.175)		1.018 *** (0.175)	1.035 *** (0.176)	1.001 *** (0.175)
DUM99	1.044 *** (0.173)	1.021 *** (0.173)		1.041 *** (0.173)	1.051 *** (0.173)	1.030 *** (0.173)
Dindustrial	0.232 ** (0.088)	0.300 *** (0.086)	0.245 ** (0.088)	0.236 *** (0.088)	0.255 *** (0.087)	0.248 *** (0.088)
Dconsumer	0.545 *** (0.101)	0.636 *** (0.099)	0.561 *** (0.101)	0.549 *** (0.101)	0.571 *** (0.100)	0.551 *** (0.101)
Dtelecom	0.459 ** (0.183)	0.438 ** (0.183)	0.522 *** (0.182)	0.458 ** (0.183)	0.448 ** (0.183)	0.475 ** (0.183)
Dbitech	0.028 (0.179)	0.066 (0.179)	0.047 (0.178)	0.028 (0.179)	0.035 (0.179)	0.042 (0.179)
McFadden R^2	3.3	3.0	1.9	3.3	3.2	3.1
Likelihood ratio	173.3 ***	156.4 ***	102.0 ***	172.9 ***	167.8 ***	163.7 ***
df=	17	16	10	16	16	16
N	6062	6062	6062	6062	6062	6062

6. Conclusion

This study investigates the intersection of two areas of the literature, the level of excess cash and acquisitions that have received a great deal of attention recently. In this study, we examine whether the level of free cash flow has any impact on firms' decisions to make takeover attempts. Specifically, we test the relationship between the level of excess cash, measured by excess cash holdings and excess accounting cash flow, and the likelihood of a takeover attempt.

The results show that prior performance is positively related to the likelihood of a takeover attempt, suggesting that many acquirers have superior share price performance that is associated with high levels of free cash flow to be used for acquisitions. Moreover, we find that the flow measure of excess cash, which is closer to Jensen's definition of free cash flow, provides support for the free cash flow theory of takeover. Specifically, the higher the level of excess accounting cash flow, the more likely the firm will make a takeover attempt. To conduct further tests of the free cash flow hypothesis, future studies can test if the takeovers carried out by cash rich bidders are value-decreasing by analyzing their post-acquisition performance.

Endnotes

¹ The "resources industry" here includes seven ASX industries and they are gold, other metals, diversified resources, energy, infrastructure and utilities, chemicals, and paper and packaging. The "industrials industry" includes four ASX industries and they are engineering, transport, miscellaneous industrials and diversified industrials. The "consumer industry" includes five ASX industries and they are alcohol and tobacco, food and household goods, retail, media, and tourism and leisure. The "telecommunications industry" includes only the telecommunications industry in the ASX industry classification scheme. The "biotechnology industry" includes only the healthcare and biotechnology industry in the ASX industry classification scheme.

² Harford (1999) defines excess cash as the deviation of the firm's cash and cash equivalent normalized by total assets from the average value predicted for its industry.

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