International CHRIE Conference-Refereed Track
2011 ICHRIE Conference

Jul 28th, 4:45 PM - 5:45 PM

An examination of cash holding policies in U.S. casino firms

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Abstract

The purpose of this reason is to examine the cash holding policies of U.S. casino firms. More specifically, we attempt to understand why casinos hold the amounts of cash that they do and what the implications of these policies are. Our results support the notion that risky dividend-paying firms hold more cash. However, we find that there is no relationship between risk and cash holdings for all firms. Furthermore, we find that casino firms that use more debt tend to hold more cash. This is the opposite finding in the literature and is worthy of further investigation.

Key Words: cash, casino

Purpose and introduction

The purpose of this research is to investigate cash holding policies of U.S. casino firms. Specifically, we hope to develop a better understanding why casino firm managers hold the amounts of cash they do and what implications this may have for the position of the firm. Cash is a critical asset to the success of any firm. As discussed by Schmidgall and Damitio (2006), cash is used to pay for wages, goods, interest payments and potentially dividends. In the case of hotel and restaurant acquisitions, cash has been a predominant financing tool (Oak, Andrew and Bryant, 2008). Casino firms not only need cash like other firms, but they generate tremendous amounts of cash. As an example, MGM Mirage generated cash flow from continued operations of more than $1.25 billion in 2007 (the Street.com, 2010).The casino segment has mucha higher liquidity ratio than other hospitality sectors (Kim and Ayoun, 2005; Ryu and Jang 2004). Thus, this evidence demonstrates the importance of cash to the casino industry. Furthermore, we believe this is the first research into the topic of cash holding policy in the casino industry.

We begin with a simple definition of “cash”. While some consider only the currency itself, most published research such as work by Mikkelson and Partch (2003) consider cash to actually mean cash and its equivalents. Thus, “cash” actually includes all liquid instruments that are readily convertible into cash. This would include readily marketable securities such as stocks and short-term bonds. When firms have sufficient other liquid assets besides cash, they do not need to raise funds because of the low cost of converting non-cash liquid assets into cash (Ozkan and Ozkan, 2004).According to Harford (1999), the top 25 percent of U.S. nonfinancial corporations held eight percent of their assets in cash and short-term investments on average. Also cash equaled about 20 percent of the equity value of largefirms such as IBM and Chrysler in 1995.Hulbert (2006) reports that most publicly-traded American firms have enough cash to pay off their debt and still have cash to spare.

While we will provide further illumination into the theoretical bases for cash holding policies of firms in the literature review, we will provide some basic motivational information here first. In terms of cash holdings, management faces an important dilemma. As previously discussed, management needs to maintain an adequate cash balance in order to properly manage day-to-day operations of the firm. However, as discussed by Luo and Hachiya (2005), the investment returns on maintaining such excess liquidity are usually much less than other investments. Additionally, as discussed by Jensen (1986), holding too much cash may cause agency problems between management and shareholders and lead to "empire building" by management.

On the other hand, cash on hand can be used to effectively take advantage of potentially valuable investment opportunities (Mikelson and Partch, 2003). The advantage relates to internal funds being first in the preferred pecking order of funding and avoiding potential agency problems with bondholders (Myers, 1977). It also helps avoid the costly process of raising new outside equity and the associated potential agency problems (Myers and Majiluf, 1984).

The debate about whether or not maintaining cash reserves increases shareholder value remains unanswered. Harford, Mandi and Maxwell (2008) show that weakly controlled managers choose to spend cash quickly on acquisitions, although there is only limited evidence regarding the effects of this spending on firm profitability. Opler, Pinkowitz, Stulz and Williamson (1999) show that firms with high cash holdings tend to take actions that are consistent with enhancing shareholder value. On the other hand, research by Harford (1999) shows that managers with weaker incentives will make poorer investment choices with their cash holdings.

This paper is organized in the following manner. The next section will discuss the pertinent literature. The third section will provide the hypotheses to be tested, the data used and the methodology employed. This will be followed by the results of the analysis. The paper will provide conclusions and recommendations for additional research in the final section.

Literature Review

The potential motivations for choosing a particular cash holdings policy can be delineated into two main categories as done by Mikkelson and Partch (2003): managerial self-interest and agency problems associated with outside financing. Managers typically have a vested interest in not only the maintenance of their positions within the firm, but also the firm itself. However, large cash holdings may lead to underinvestment in value-increasing in favor of managerial perquisites, or overinvestment in value-reducing projects (Jensen, 1986). Evidence of this is shown in research by Blanchard, Lopex-de-Silanes and Schleifer (1994). They find that firms who have sudden influxes of large cash from a won or settled lawsuit tend to invest in lower-value investment opportunities. Agency problems of free cash flow are likely to develop in large and more established firms and result in an increase of cash holdings (Bates, Kahle and Stulz, 2009). Moreover, as discussed by Mikkelson and Partch (2003), excess "financial slack" provides an opportunity to escape the scrutiny or discipline of outside financing. Similarly, Harford, Mansi and Maxwell (2008) find that weakly-controlled managers are more apt to spend cash more freely on capital expenditures.

Moreover, part of managerial self-interest involves survivability of the firm as discussed by Opler, et. al (1999). They find that "riskier" firms (those with greater variability in their cash flows) tend to hold a higher proportion of liquid assets. A similar finding is shown by Luo and Hachiya(2005) who find a significantly positive relationship between sales volatility and cash holdings for a sample of Japanese firms. In terms of risk in the hospitality industry, the casino industry tends to have greater systematic risk (Gu& Ku, 1997). The authors also propose that because casinos are also in the entertainment business their revenue stream is more volatile than the hotel industry. Moreover, research indicates that the casino industry has high liquidity (Kim &Ayoun, 2005; Ryu& Jang, 2004). On the other hand, Mikkelson and Partch (2003) look at changes in sales and variation in operating income relative to cash holdings. They find negative relationships, albeit non-significant. This may be from differences in the time period examined. Opler, et al. (1999) use the 1971-1994 period and Luo and Hachiya (2005) use the 1989-2002 period for their study. Mikkelson and Parch (2003) use the 1986-1991 periodwhich includesa recession in the middle of their sample.

Financing is tied together with the cash holding policy. The "pecking order" theory of financing was first proposed by Myers (1977)and was later advanced by Myers and Majiluf (1984). When firms are looking for financing for future growth, they have a number of options. One would be to pursue new outside equity. However, given agency costs of effective monitoring and information asymmetry, raising new equity is costly and lengthy. A more favored source of capital would be debt, typically either in the form of a loan or bonds. However, there are agency costs associated with the issuance of debt as well in order to reduce information asymmetry for potential lenders. Overall, the idea that procurement of outside capital is costly has been documented by Smith (1977) and Mikkelson and Partch (1986). In the case study by Gu and Ku (1997), the project financing decision made by Circus Circus and the Mirage showed that internal funds were favored the most, followed by other types of secured (mortgages) and unsecured debentures.

Although the issuance of debt isgenerally faster and less costly, one of the potential problems that can arise is the underinvestment problem as discussed by Myers (1977). For example, management may have an opportunity to invest in a project. The project generates a safe, steady cash flow without providing an excess return to shareholders. This type of project will make bondholders happy, but not the shareholders. Therefore, although management may have enough funds to complete the project, they will pass on it because it favors bondholders more than shareholders. Hence, the firm experiences an "underinvestment" of funds. Another potential problem is that principal and interest payments for the debt constrain management's ability to take advantage of potential investment opportunities for future growth. This will be discussed later in this section.

Finally, there is the preferred form of capital (if available), internally generated funds. This was previously mentioned in the case study of Circus Circus and the Mirage (Gu and Ku, 1997). Using internal funds is preferred by management because the payment of dividends (from outside equity sources) and interest (paid to outside debt sources) involve scrutiny from the capital markets. If these funds are readily available, they can help management take advantage of positive NPV growth opportunities at a lower cost than that of new external equity (Brealey, Myers & Allen, 2008).

Thus, this theoretical underpinning would lead to the expectation that firms with significant cash holdings would need less financial leverage. In addition, if interest payments from debt are a constraint, firms would try to reduce leverage (Bates, Kahle and Stulz, 2009). Opler, et. al. (1999) regress total firm leverage on the log of the ratio of cash to assets and find a significantly negative relationship between the two. This is also supported by the findings of Luo and Hachiya (2005) who find a negative relationship between total leverage (total debt/assets) and cash holdings. Furthermore,Mikkelson and Partch(2003) look at the median long-term debt to asset ratios of large cash holding firms and other firms. They find that cash holding firms have lower long-term debt than regular firms.

Firm size may also play a role in cash holding policy. However, the evidence regarding the relationship is indeterminate. On the one hand, an early study by Vogel and Maddala (1967) shows large firms tend to have lower cash-to-asset ratios. Opler, et. al (1999) argue that management realizes the opportunity cost of holding excess cash. Therefore, large firms would hold less cash. They run a regression for firms from 1972 and 1994 and find a significantly negative relationship between firm size and cash holdings. This negative relationship is also found for firms from 1986-1991 by Mikkelson and Partch (2003). In terms of casino firms, there may be a negative relationship because larger casino firms tend to be more financially stable and could be more resistant to economic downturns because larger casinos provide diverse services to their patrons (Greenlees,2008) Smaller firms may have to hold largeramounts of cash because they tend to have higher costs related to the acquisition of fundson short notice (Brealey, Myers and Allen, 2008).

On the other hand, large firms are usually successful. This may mean that they have been able to accumulate more cash over time. As argued by Myers and Majiluf (1984) using internal funds is a cost saving maneuver because the funds are cheaper than outside funding. Froot (1993) studies Intel Corporation and argues that firm with large cash reserves can deter competition. This is because they have a greater ability to take advantge of new investment opportunities or make acquisitions. Large firms may have managers who retain cash to engage in some form of "empire building" as suggested by Jensen (1986). Also, as argued by Opler, et. al. (1999) firm size is a takeover deterrent. Larger firms with more cash are able to engage in political activity (i.e. spend more of political contributions or lobbying efforts) to force potential bidders to use more resources. Luo and Hachiya (2005) find a significantly positive relationship between firm size and cash holdings for firms in Japan from 1989 to 2001.Brealey, et al. (2008) report that firms in certain industries such as biotech firms have a large reservoir of cash holdings for their future investment needs. In addition,large cash holdings may help firms to insulate themselves during economic downturns.

The growth opportunity prospects for the firm are related to the pecking order of financing proposed by Myers (1977). The use of internal funds (if available) is the easiest and cheapest. Furthermore, as argued by Opler, et. al. (1999), the availability of these funds helps management avoid the scrutiny of the capital markets. If the firm has significant growth opportunities, management will want to hold cash to be able to take advantage of them.

The empirical evidence between growth opportunities and cash holdings is very consistent. Mikkelson and Partch (2003) look at the medians of firms that hold significant amounts of cash and those that don't. They find a much higher market-to-book ratio (of assets) for cash holding firms. Using a regression analysis, they find a significantly positive relationship between cash holdings and the market-to-book ratio. This finding is consistent with Opler, et. al. (1999), Harford (1999), and Kim, Mauer and Sherman (1998).Luo and Hachiya (2005) use a one-year growth rate in sales as a proxy for growth opportunities in their study of Japanese firms. They also find a significant and positive relationship between cash holdings and growth opportunities.

Hypotheses, Data and Methodology

The purpose of this paper is to examine the cash holding policy of U.S. casino firms. Specifically, we intend to test the following two research hypotheses:

H_{A1}: There is a positive relationship between cash holdings and firm risk (variability of cash flow).

H_{A2}: There is a negative relationship between cash holdings and leverage.

Our data is from the Compustat annual industrial files with the SIC code 7990 (casino industry) for cash holdings and their determinants from 1990-2007. Our sample included a total of 155 firms.

Our full model is based on modified methodologies from Mikkelson and Partch (2003) and Bates, Kahle and Stulz (2009). We employ anOLS regression model using the sample of cash holdingsand their determinants. Predicted signs for variables are in Table 1.

Table 1.Predicted signs of regression coefficients.

Dependent variable = cash holdings	
Independent variables	Predicted sign
LEV	-
RISK	+
M/B	+
SIZE	+/-
EQUITY-ISS	+
DEBT-ISS	+
CAPEX	-
ACQ	-
DIV	-

Cash Holdings is the ratio of cash equivalents to book assets. LEV is the leverage variable as measured by the ratio of total debt to total book assets. RISK is the absolute change in earnings before interest, taxes and depreciation. M/B is the market to book ratio, as defined by Opler, et. al (1999). This ratio is calculated as the book value of assets, minus the book value of equity, plus the market value of equity, divided by book assets. SIZE is the natural log of total book assets. EQUITY-ISS is net equity issuance which is equity sale minus equity purchases, divided by book assets. DEBT-ISS is the net debt issuance which is long-term debt issuance minus long-term debt retirement divided by book assets. CAPEX is the ratio of capital expenditures to the book value of total assets. ACQ is cash outflow due to the acquisition divided by total book assets. DIV is the amount of common dividends paid.

The following regression model will be used to test the previously stated hypotheses (see table 1 for the descriptions of variables):

$$\text{Cash Holdings} = \beta_0 + \beta_1 \text{ LEV} + \beta_2 \text{ RISK} + \beta_3 \text{ M/B} + \beta_4 \text{ SIZE} + \beta_5 \text{ EQUITYISS} + \beta_6 \text{DEBTISS} + \beta_7 \text{CAPEX} + \beta_8 \text{ ACQ} + \beta_9 \text{ DIV} + \varepsilon_i$$

The dependent variable in the model is Cash holdings, which is the cash equivalents to assets ratio. “Cash equivalents” includes cash and marketable securities.The primary variables of interest are leverage, risk, and the market to book ratio. The leverage ratio ismeasured by the ratio of total debt to total assets. Firms with low leverage ratios are likely to have high cash holdings.Risk is the absolute change in EBITDA from 1990 to 2007. Firms with high earnings are likely to have high cash holdings, similar to the findings of Luo and Hachiya (2005). The growth opportunity variable is measured by the ratio of market value to book value. We expect firms with high growth opportunities to have higher cash holdings.

We have also inserted control variables into the regression model to help delineate the effects of the variables of interest. In regards to the uses of cash, we divide them into cash outflows and cash inflows. The three categories of cash outflows are capital expenditures, acquisitions and dividends. The two categories of (potential) cash inflows through financing activities are net equity issuance and net debt issuance. According to Mikkelson and Partch (2003), the median ratio of all investment expenditures to operating assets for high cash firms is higher than the median of comparison firms. On the other hand, recent empirical studies show a negative relationship between the average cash ratio and acquisitions, capital expendituresand dividend payments (Bates, Kahle&Stulz, 2009). As S&P 500 companies' aggregate cash balance has increased in the 2000s, dividend payouts and mergers are also on the rise (Cheng, 2010).

Since it takes cash to make capital expenditures, we expect firms with high cash holdings to make fewer capital expenditures. Similarly, firms that make more acquisitions have lower cash holdings. These expectations are consistent with Riddick and Whited (2009) who find that cash flow and saving move in opposite directions (in other words, they invest). In terms of dividends, firms that pay dividends tend to be less risky and are scrutinized by the capital markets. Therefore, "empire building" would be less likely and firms that pay dividends will have lower cash holdings.

We follow Bates et al. (2009) for controllingfor cash inflows through financing activities. They control for equity and debt issues surrounding an initial public offering. While cash holdings increase after raising capital, cash holdings decrease after the raised capital has been spent. We use net amounts for financing through both debt and equity issues.

Discussion of Results

Table 2 shows the descriptive statistics for the entire sample (see Table 1 for the descriptions of variables). The total number of observations for the full sample is 952; the mean cash holdings to assets ratio is approximately 12 percent.

There are a number of significant Pearson correlation coefficients among the variables, particularly with leverage and size. It is important to recognize the potential for multicollinearity within the regression models and this issue will be discussed later in the results.

Table 3 shows the results for the regression model using the full sample. When we first ran the regression model, we discovered serial correlation within the model, as we suspected. The Durbin-Watson statistic was approximately 1.0, indicating serious serial correlation. To correct this problem, we followed the Cochrane-Orcutt procedure as described by Neter, Wasserman and Kutner (1989).

The process begins by saving the residuals from the full regression model. We then ran the autocorrelation function (ACF) in Minitab to determine if any lags in the dependent variable are significant. We found that the lag of one period was significant with a ρ of .46. Once this amount has been obtained, we transform both dependent and independent variables in the following manner:
$Y_t' = Y_t - \rho Y_{t-1}$ and $X_t' = X_t - \rho X_{t-1}$

Thus, the new dependent variable becomes the difference between the dependent variable at time t and the lagged dependent variable that has been multiplied by ρ. We applied the same transformation for all of the independent variables. It should be noted that since we are using a difference with a transformed variable and not merely a lagged dependent variable the Durbin-Watson statistic is still a valid indicator of potential serial correlation.

We use the Best Subsets algorithm in Minitab to find the best univariate and multivariate models. The Best Subsets algorithm makes use of the Cp criterion, which involves the total mean squared error. We sought out the models with the lowest Cp statistic. As shown in Table 3, the Durbin-Watson statistic for all models ranges from 1.95 to 2.01, indicating the absence of serial correlation in the models. We also checked the variance inflation factors (VIF) for multicollinearity. The VIF for the models ranged from 1.01 to 2.07, indicating a lack of multicollinearity. F-statistics for all the models are significant at 1 percent level.

Table 2.Descriptive statistics for the entire sample.

Variable	*N*	Mean	Std Dev.	Minimum	Maximum
Cash Holdings	952	0.1217	0.1429	0.000	0.9799
LEV	952	1.553	9.699	0.027	195.333
RISK	952	1.629	11.045	0.0	306.250
M/B	952	14.44	229.0	0.20	6255.81
SIZE	952	4.8176	2.3975	-5.8091	10.059
EQUITY-ISS	952	0.1491	1.0935	-2.9499	26.0833
DEBT-ISS	952	0.0556	0.361	-2.030	5.814
CAPEX	952	0.0919	0.1149	-0.007	1.442
ACQ	952	0.0185	0.0719	-0.204	0.789
DIV	952	8.03	49.13	0.000	796.90

Cash Holdings is the ratio of cash equivalents to book assets. LEV is the leverage variable as measured by the ratio of total debt to total book assets. RISK is the absolute change in earnings before interest, taxes and depreciation. M/B is the market to book ratio, as defined by Opler, et. al (1999). This ratio is calculated as the book value of assets, minus the book value of equity, plus the market value of equity, divided by book assets. SIZE is the natural log of total book assets. EQUITY-ISS is net equity issuance which is equity sale minus equity purchases, divided by book assets. DEBT-ISS is the net debt issuance which is long-term debt issuance minus long-term debt retirement divided by book assets. CAPEX is the ratio of capital expenditures to the book value of total assets. ACQ is cash outflow due to the acquisition divided by total book assets. DIV is the amount of common dividends paid.

Table 3. Regression analysis results for full sample.

Dependent variable = cash holdings	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Intercept	.118***	.105***	.108***	.109***	.109***	.109***	.108***	.109***	.109***
LEV	---	.002**	.002**	.002***	.002***	.002***	.002***	.002***	.002***
RISK	--	--	--	--	--	--	--	--	.000
M/B	--	--	--	--	--	-.000	-.000	-.000	-.000
SIZE	-.021***	-.016***	-.016***	-.016***	-.015***	-.016***	-.015***	-.015***	-.015***
EQUITY-ISS	--	--	--	--	--	--	.006	.005	.006
DEBT-ISS	--	--	--	.033***	.037***	.036***	.038***	.038***	.038***
CAPEX	--	--	-.092***	-.103***	-.109***	-.108***	-.114***	-.114***	-.114***
ACQ	--	--	--	--	-.114**	-.112**	-.119**	-.118**	-.118**
DIV	--	--	--	--	--	--	--	.000	.000
F Statistics	73.2***	56.1***	40.2***	32.7***	27.4***	22.9***	19.9***	17.6***	15.5***
Adjusted R-square	7.1%	10.4%	11.0%	11.8%	12.2%	12.2%	12.3%	12.2%	12.1%
Durbin-Watson	1.97	2.01	1.97	1.95	1.95	1.96	1.97	1.97	1.97

*significant at .10, **significant at .05, ***significant at .01.

Cash Holdings is the ratio of cash equivalents to book assets. LEV is the leverage variable as measured by the ratio of total debt to total book assets. RISK is the absolute change in earnings before interest, taxes and depreciation. M/B is the market to book ratio, as defined by Opler, et. al (1999). This ratio is calculated as the book value of assets, minus the book value of equity, plus the market value of equity, divided by book assets. SIZE is the natural log of total book assets. EQUITY-ISS is net equity issuance which is equity sale minus equity purchases, divided by book assets. DEBT-ISS is the net debt issuance which is long-term debt issuance minus long-term debt retirement divided by book assets. CAPEX is the ratio of capital expenditures to the book value of total assets. ACQ is cash outflow due to the acquisition divided by total book assets. DIV is the amount of common dividends paid.

The univariate model for the full sample indicates that the firm size is significant and negative, indicating that larger firms have lower cash holdings. This is not a surprising result in that our expectation was indeterminate given the evidence in the existing literature. It should also be noted that the size coefficient is significant and negative in all regression models.

The next significant variable is leverage. The coefficient here is significant and positive. This is the opposite of our a priori expectation and contradicts the findings of Luo and Hachiya (2005). However, it may be the case in that shareholders recognize the need to constrain managers who have access to significant cash holdings in an attempt to prevent "empire building" as discussed by Jensen (1986). Shareholders may take on more debt so that interest payments serve to monitor the actions of managers.

Model 3 includes the previously mentioned variables as well as the capital expenditures variable. The coefficient is significant and negative as we expected. This finding tends to support the notion that casino firms with small cash holdings make more capital expenditures. This finding tends to support the pecking order theory of financing by Myers (1977). Firms may have a preference for using cash and cash equivalents to expand with capital budgeting projects.

Model 4 adds a net debt issuance variable. The coefficient is significant and positive as expected. Casino firms that issue take on a greater amount of debt (more than they pay off) tend to hold more cash. Model 5 adds an acquisition variable and the coefficient is significant and negative as expected. Firms that make acquisitions appear to tend to spend more of their cash.

We next added a market to book ratio variable and a net equity issue variable to models 6 and 7, respectively. However, neither variable had coefficients of any significance. However, Model 7 does have the highest adjusted r-squared values of any of the 9 regression models. A dividend payment variable and a risk variable were added to models 8 and 9, respectively. Neither of these variable coefficients was significant nor did they add explanatory power to the models. Thus, considering the lack of significance of the risk variable for the full sample, there is no statistical evidence supporting our research hypothesis of a positive relationship between cash holdings and firm risk.

Conclusions and implications for future research

The purpose of this research was to assess the relationship between the cash holding policy of casino firms and two primary variables: firm risk and firm leverage. We found no support for the full sample such that risky firms hold more cash. A potential research topic would be to try using different proxies for risk and see if they produce different results.

In terms of the relationship between cash holding policy and firm leverage, we find a significant and positiverelationship between the two for the full sample. This is the opposite of our expectations and different from the findings of researchers such as Opleret. al. (1999) and Luo and Hachiya (2005). Thus, it appears that casino firms are borrowing more debt and holding on to it. Thus, these actions may support the pecking-order theory in that casino firms are using internal funds (presumably generated from the sale of goods and services) to finance growth opportunities. However, a fundamental question remains: why borrow money in the first place? This is a potential future research topic.

The previous result may be either impacted by the years analyzed (1990 to 2007) or else the lack of homogeneity of the sample. Although we utilized SIC Code 7990 in our data analysis, an examination of the companies retrieved from the database indicates a wide range of company types. When one thinks of the casino industry, one usually thinks of well-known casino hotel companies such as MGM-Mirage or Wynn. However, the full sample includes many other "non-traditional" casino and gaming-related firms that could be confounding the results. It may be fruitful for future researchers to logically categorize this variety of firms into more homogeneous groups and re-examine the cash holding policy once again.

This study used casino data from 1990 to 2007. Since casino revenues dramatically fluctuated depending on economic situation (recession vs. boom), it would be worthwhile to analyze different time periods. While some firms pay dividends, others do not pay dividends. The sample could be categorized by dividend paying firms and non-dividend paying firms.

Finally, we focused primarily on casino firms with SIC Code 7990. It may be worthwhile to examine the cash holding policy of other segments of the hospitality industry such as lodging or restaurants and see if the results reported herein are supported or refuted.

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