Liquidity aspects of corporate business: A study with reference to selected firms from the Indian manufacturing sector

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ABSTRACT

Debt involves higher transaction costs than internal fund sources, which can be brought to bear almost immediately. Transaction costs, flexibility, and liquidity constraints can all lead to an overriding preference for internally generated funds. As liquid funds is a necessity to a firm, it is necessary to observe how a firm’s decision regarding liquid asset holding changes with change in its access to debt. But, total debt to total assets, a leverage variable includes short-term, mid-term and long-term debt which may affect liquidity differently. The present study looks into the impact of short-term and long term debt on the demand for liquid assets by Indian firms after controlling for the other determinants of liquid asset holding. It tries to investigate whether the variables that have a strong influence on the choice of liquid asset holding by firms in developed countries also have a significant impact on the liquid asset holding by firms in India. This study also concentrates on whether the capital markets reform that was being undertaken in a gradualist manner has important implications for corporate liquidity. The entire analysis focusing on the association between corporate liquidity and capital structure of firms has been done using panel regression analysis using representative firms each year. Interestingly the choice of liquidity responds differently to short-term and long-term debt ratios at least in the Indian case. The significant and positive association between leverage ratio and corporate liquidity suggest that Indian firms adhere to the precautionary motive of liquid asset holding. The negative association between short-term debt ratio and liquidity reflects that these two are treated as substitutes.

Key words: Corporate liquidity, financial structure, liberalization, capital expenditure, investment opportunity, financial distress.

JEL Classification: G32

INTRODUCTION

The choice of debt maturity structure is important to firms since a badly chosen mix may cause an inefficient liquidation of a positive-NPV project. It can also be used by firms as a signaling device in an imperfect market to provide information about their quality, credibility and future prospects. It should be noted that debt irrespective of the maturity structure involves higher transaction costs than internal fund sources, which can be brought to bear almost immediately. Moreover, internal funds give firms the flexibility to respond quickly as investment opportunities arise. Thus, transaction costs, flexibility, and liquidity constraints can all lead to an overriding preference for internally generated funds. There are three motives for maintaining liquidity: transaction motive, precautionary
motive and speculative motive. The transaction motive\(^1\) refers to the holding of liquid assets to meet anticipated obligations as they are not perfectly synchronized with cash receipts. That is to finance the transactions that a firm carries out in the normal course of business. Liquid assets provide a cushion that would allow the firm to survive a period of low earnings during which the firm might be unable to access capital markets or could do so only at a very high cost. The firm's financial structure will affect this decision because the degree of leverage used by the firm will affect the likelihood that cash flows will be insufficient to cover debt service and other fixed charges. This is referred to as precautionary motive. Again, the decision to hold liquid assets may allow the firm to invest in a more attractive growth opportunity that may have a high option value of waiting.

The speculative motive indicates the desire of a firm to take advantage of profitable opportunities typically outside the normal course of business. While the precautionary motive is defensive in nature, the speculative motive represents a positive approach. As liquid funds are a necessity to a firm, the firm has to decide how much liquid assets to hold. Again, total debt to total assets, a leverage variable includes short-term, mid-term and long-term debt. The effect of the leverage ratio may not be prominent in influencing corporate liquidity as the effects of short-term and long-term debt may neutralize it. This is because long-term and short-term debt may affect the choice of liquid asset holding differently and opposite effects may cancel each other. So, it is necessary to distinguish the impacts of the short-term and long-term debts on corporate liquidity separately in order to have a deeper insight to the relationship between leverage and corporate liquidity. The present study is a sincere attempt in this area. It intends to capture and analyze the impact of short-term debt on liquid asset holding of firms vis-à-vis the impact of long-term debt on the liquid asset holding of the same firms.

**LITERATURE SURVEY**

There are several studies mostly in the context of developed countries trying to identify the determinant of corporate liquidity. However, studies focusing on the relationship between corporate liquidity and maturity structure of debt are limited. The few studies that are relevant to the present study mainly capture the impact of liquidity on debt maturity structure. Diamond (1991) analyzed the debt maturity structure for borrowers with private information about their future credit rating. He argued that borrowers with high credit ratings or lower liquidity risks prefer short-term debt and those with somewhat lower ratings or relatively higher liquidity risks prefer long-term debt. Antoniou et al. (2002) examined the determinants of corporate debt maturity structure decisions of French, German and U.K firms. They observed that corporate tax rate, growth opportunities, liquidity, firm quality, earnings volatility, asset maturity and firm size have different degree and direction of effect on debt maturity across the sample countries. At the same time the direct association of debt maturity with leverage in all countries confirmed the predictions of the liquidity risk argument. The present study tries to identify the determinants of corporate liquidity in the context of a developing country like India. Unlike the previous studies the emphasis is on how far corporate liquidity is affected by the maturity structure of debt after controlling for the other determinants.

**MATERIALS AND METHODS**

In this study, the sample consists of 53 firms drawn from twelve different industries belonging to the Indian manufacturing sector. The data for the study is obtained from the secondary sources compiled by the Reserve Bank of India from acc5rounds submitted to it by all companies quoted on the stock market. The time period covers a span of 25 yrs which can be separated into two phases. The period preceding the initiation of reforms: 1986-87 to 1990-91. This includes the crisis period of 1990-91. The post-liberalization period stretches from 1991-92 to 2011-12. The fixed effect panel regression technique is used to analyze the influence of term-structure of debt on the demand for liquid asset by firms. Since this is an estimation technique simultaneously involving both cross-sectional and time-series data, the estimates are expected to be more accurate and efficient.

**Description of variables and their variation across liquidity groups**

**The variables**

The dependent variable is a measure of liquid asset holding or liquidity ratio. To indicate the extent of liquidity, the commonly used ratios are:

1. The ratio of cash and marketable securities to total assets or the cash ratio
2. The ratio of current asset to current liability often referred to as the current ratio
3. The ratio of net working capital to net assets or the net working capital ratio
4. The ratio of current assets net of inventories to current liabilities or the quick ratio.

Since, cash is the most liquid asset, the cash ratio is used as a measure of liquid assets holding. From the data available,
the proxy for cash ratio used in the study is the ratio of cash and bank balances to net assets. Net assets are total assets minus cash. The independent variables are proxies representing different variables that are emphasized in different theories mainly the static trade-off and financing hierarchy theory on corporate liquidity. The set includes net working capital, firm size, R&D to sales, capital expenditures, and investment opportunities. The level of a firm's net working capital (nwca) has a bearing on its profitability as well as risk. A decrease in the networking capital of a firm leads to an increase in risk or the probability that the firm will become technically insolvent and will not be able to meet its obligations when they become due for payment. Thus, with decrease in the firm's net working capital, demand for liquid assets increase as for a firm external financing is costly and retaining reserves as liquid assets serves as a precautionary motive.

According to Barclay and Smith (1996), large firms are more diversified, due to which the cost of external financing for large firms tend to be smaller. Firm size (size) affects liquidity. Moreover, the large firms having more tangible assets face fewer borrowing constraints as compared to small firms. Thus, White (1980) and Fazzari and Peterson (1998) argue that the large firms are more inclined to external financing and hence have less demand for liquid assets. However, there also exists another explanation forwarded by the proponents of financing hierarchy. It is that firms that are larger are presumably more successful and should have more liquid assets, thereby suggesting a positive association between firm size (size) and demand for liquid assets. Financial distress, which results from a mismatch between the currently available liquid assets of a firm and its current obligations under its “hard financial contracts”, is supposed to have important implications for the liquidity aspects of the firm. Thus, the financial distress costs are those that are related to the costs of liquidation of assets.

Titman and Wessels (1988) argue that the costs of liquidation or distress costs are higher for firms that produce unique or specialized products and lower for firms with assets of high collateral value. They also suggest that the ratio of research and development to sales or the ratio of advertising to sales (rdns) may act as proxy for the indirect costs of financial distress. Again, research and development or advertising may contribute to building up of assets and resources characterized by asymmetric information between corporate insiders and outside investors in the market. So, Myers and Majluf (1984) have argued that firms can optimally maintain financial slack or excess liquidity, which can be used to finance projects, avoiding the adverse selection costs of interacting with a less informed market. This in turn gives rise to a positive relationship between corporate liquidity and research and development, advertising. Yet, another explanation for the positive relationship between liquidity and R&D and advertising cost is R&D expenditure and advertising expenditure creates stock of future investment options that can expire unutilized if the firm runs into financial distress. These costs can be minimized if the firm reduces its insolvency risk by maintaining high liquidity. Therefore, corporate liquidity should be higher for firms with high R&D and advertising. If R&D (rdns) is considered to represent an investment opportunity, then the financing hierarchy model argues that firms that invest more should have fewer internal resources and hence would accumulate less cash.

Next is the ratio of capital expenditures to assets (cpexna). According to Opler (1995), firms' incurring low capital expenditures is supposed to possess less collateralizable assets. Such firms choose higher debt levels and have less demand for liquid assets, to increase the chances of bankruptcy and thereby limit their managers' consumption of perquisites. Thus, capital expenditure is supposed to have a positive impact on liquidity to reduce the agency costs. Following the financing hierarchy theory, increasing the capital stock, the firm incurs expenditure (cpexna), which in turn reduces the internal financing capacity of a firm. Smith and Watt (1992) are of the opinion that the investment opportunity (invo) of a firm also determines its demand for liquid assets. If the degree of information asymmetry between managers and investors are constant, then firms with high investment opportunities are expected to hold more cash, since the costs they incur if their financial condition worsens are higher. Firms that are able to exploit high investment opportunities (invo) are expected to have good return. High cash flows in turn build up the liquid reserves of the firm faster than its use. Thus, similar to the static trade-off model, the financing hierarchy model is also of the view that the investment opportunities of a firm are positively associated with liquidity.

John (1993) is of the view that firms with access to the debt markets may consider borrowing or external financing as a substitute to maintaining a stock of liquid assets. Thus, firms' debt ratio (dtna) which proxies for the firm's access to external markets is expected to be negatively related to the demand for liquid assets by firms. But Anderson (2002) argued that the precautionary motive for corporate liquidity accounted for a positive relationship between liquidity and leverage. Thus, the impact of leverage on liquidity seems to be ambiguous. Chudson (1945) opined that demand for liquid cash tend to be higher among profitable firms. If high cash flows can serve as a proxy for highly profitable firms, then the ratio of EBIT to total assets (cflow) can provide a ready source of liquidity to meet operating expenditures and maturing liabilities. Hence, high cash flows are expected to have a positive relation with liquid asset holding. The transaction cost model as well as the financing hierarchy model states that the firms that pay more dividends (divd) should have lower demand for cash and marketable securities. This is because a firm that currently pays dividends can raise funds at low cost by reducing its dividend payments, in contrast to a firm that does not pay dividends or pays very little dividends and has
to access the capital markets to raise funds. The proxy used is a dummy variable that takes a value one if the firm pays dividend.

Apart from the variables argued by the two competing theories of liquidity, viz. the static trade-off and financing hierarchy theory that are supposed to influence corporate liquidity, the study looks into how the firm’s capital structure can affect the firm’s choice of liquid asset holding with respect to the term structure of debt in the Indian context. Since the data does not indicate the term-structure of debt, proxies for long-term and short-term debt are used. Following the standard practice, long-term debt ratio (stdtna) is defined as total debt minus current liabilities over net assets. The proxy used for short-term debt ratio (stdtna) is bank borrowing to net assets as bank issues mainly short-term and mid-term debt. The time period under the study includes the phase during which there was a shift in policy regime due to industrial and financial liberalization of the Indian economy. One of the major measures of the financial reforms programme that was initiated in 1991-92 was the stock market reform. The development of the capital market in India in the lines of the more advanced markets like UK and US may be treated by firms as new investment modes as alternatives to straight debt finance. If the alternative financing methods operate well, then they can create much greater flexibility than traditional debt-based financial structures. In so doing, they may allow the firm to operate with a smaller proportion of their assets tied up in liquid form. This in turn can help in achieving higher average returns on assets and growth-promoting development. Another major reform related to the banking system was that credit delivery was shifted away from cash credit to loan method.

Cash management became an important task with the phasing out of the cash credit system in the reform period. So, the firms needed to decide more on the optimal amount of cash or near cash that they need to hold and also on how to deploy the cash. This study also concentrates on whether the capital markets reform that is being undertaken in a gradualist manner has important implications for corporate liquidity. Thus a structural break dummy is introduced to capture the impact of economic reforms on liquidity of firms. Along with the structural break dummy (lib) two interaction terms are also introduced to capture the change in the marginal impact of short-term debt (dst) and long-term debt (dlt) respectively, due to the newly introduced liberalization policies on corporate liquidity. Though, the primary focus is the relationship between leverage and liquid asset holding by Indian firms, the other determinants of liquid asset choice have also been controlled for. The regression equation estimated is:

\[ \ln(Cash)_{it} = \alpha + \beta_1 \ln(Total Debt)_{it} + \beta_2 \ln(Capital Structure)_{it} + \beta_3 \ln(Credit Delivery)_{it} + \beta_4 \ln(Cash Management)_{it} + \beta_5 \ln(Other Factors)_{it} + \mu_{it} \]

Where firm-level dummies \( d_{ij} = 1 \) if \( i=j \) and 0 elsewhere. The findings of the empirical analysis is in Table 1.

### RESULTS AND DISCUSSION

The long-term debt ratio has a positive coefficient which is highly significant; the short-term debt is also significant but with a negative coefficient. The major finding that other

\[ R^2=0.81 \]

** indicates significant at .05 level

** indicates significant at .01 level

Table 1: Fixed effect results of the association between Liquid asset holding and the Maturity structure of debt

<table>
<thead>
<tr>
<th>Variables</th>
<th>Co-efficients and t-ratios in parentheses</th>
</tr>
</thead>
<tbody>
<tr>
<td>ltdtna</td>
<td>0.49555 (9.53) **</td>
</tr>
<tr>
<td>stdtna</td>
<td>-0.17743 (3.54) **</td>
</tr>
<tr>
<td>nwcna</td>
<td>-1.07610 (45.3) **</td>
</tr>
<tr>
<td>rdsn</td>
<td>-1.14631 (0.89)</td>
</tr>
<tr>
<td>size</td>
<td>-0.01046 (3.17) **</td>
</tr>
<tr>
<td>cpexna</td>
<td>-0.33545 (8.24) **</td>
</tr>
<tr>
<td>invop</td>
<td>0.00066 (0.75)</td>
</tr>
<tr>
<td>cflow</td>
<td>0.93528 (13.9) **</td>
</tr>
<tr>
<td>divd</td>
<td>-0.01838 (1.54) *</td>
</tr>
<tr>
<td>lib</td>
<td>0.04315 (1.85) *</td>
</tr>
<tr>
<td>dlt</td>
<td>-0.14040 (1.72) *</td>
</tr>
<tr>
<td>dst</td>
<td>-0.23604 (2.61) *</td>
</tr>
<tr>
<td>R^2=0.81</td>
<td>F(64, 1260) =6.123, N=1325</td>
</tr>
</tbody>
</table>


\[ R^2=0.81 \]
things equal, greater long-term debt is associated with firms setting higher target levels of liquid assets and that greater short-term debt is associated with lower levels of liquid assets; suggest that Indian firms may view long-term and short-term debt differently. The positive association between long-term debt and liquid asset holding is consistent with the presence of a precautionary motive for holding liquid assets for Indian firms that maintain high leverage. This also confirms to the linkage between leverage, liquid asset holding and growth opportunities highlighted in the model developed by Anderson (2002). In particular, the channel he identified operates in the following manner. Liquidity grants a survival option to the shareholders of the levered firm. Consequently, these shareholders will choose a higher level of asset liquidity that would maximize the value of the firm. In so, doing they reduce the rate of return on assets and hence the growth of the firm. This creates a linkage from high debt to high liquidity to slow growth. Long-term debt may reflect a durable feature of the firm's capital structure to which other policies, such as dividend and liquid asset holding are adapted. The negative association between short-term debt and liquidity suggests that short-term debt can be used more actively and may be substitutable for liquid asset holding. The fact that Indian firms use short-term debt as substitutes to liquid asset holding signals that a firm facing persistently low cash flows will respond either by drawing down available liquid assets or by accumulating debt or both.

The structural break dummy is significant and positive indicating that in the post-liberalization period also Indian firms did not reduce accumulation of liquid assets or stopped adhering to the precautionary motive for holding liquid assets. On the contrary, the impact of financial liberalization was such that the Indian firms started accumulating larger proportion of liquid assets. Although the short-term debt ratio and the long-term debt ratio are having opposite impacts on liquid asset holding, however, the change in the marginal impacts of both short-term and long-term debt ratio due to financial liberalization policies on the liquid asset holding is significant and negative. Thus, when the interaction terms are taken into account, the effect of liberalization continues to be positive. This suggests that in the post-liberalization period, the rate of substitution between liquid assets and both short-term and long-term debt has decreased. It seems in the present context, where the market rate of interest has a tendency to fall every alternative day, financial institutions are reluctant to issue long term debts to avoid high rate of interest on a contractual basis over a long period of time. As a result of financial liberalization, greater institutionalization of the Indian capital market resulted in more and more companies tapping the equity markets relative to the past. Nevertheless, the importance of the Indian capital market in financing of new investments and thereby having a long-lasting impact on the growth-potential of these firms is still lagging behind. Among the other determinants of liquidity, net working capital to net assets, firm size, capital expenditure to net assets, cash flow, dividend payments are all significant and maintain their directions of influence much similar to the models used for developed countries. However, research and development expenditure and investment opportunities continue to be insignificant.

CONCLUSION

This study tries to explore whether the variables that have a strong impact on the choice of liquid asset holding in developed countries also have a similar kind of impact on the liquid asset holding by firms in a developing country like India. The factors like firm size, capital expenditures, cash flow and net working capital seem to have strong and significant influence on corporate liquidity. The direction of influence of firm size and capital expenditures emphasizes the importance of the financing hierarchy theory in determining corporate liquidity. Networking capital and cash flow also determine corporate liquidity in a way consistent with the existing theoretical literature. An interesting observation is that the choice of liquidity responds differently to short-term and long-term debt ratios at least in the Indian case. The significant and positive association between leverage ratio and corporate liquidity suggest that Indian firms adhere to the precautionary motive of liquid asset holding. The negative association between short-term debt ratio and liquidity reflects that these two are treated as substitutes. The extent of developments in the Indian capital market after twenty years from the initiation of reforms could not provide incentive to Indian firms to reduce their liquid asset holding. Two explanations can be put forward in favour of firms' holding more liquid assets in the post-liberalization period. The firms may feel less protected in the post-liberalization period and following the precautionary motive may be interested in holding more assets in liquid form. The alternative explanation is that firms may be holding higher amount of liquid assets so that they promptly respond to newer investment opportunities, which may be forthcoming due economic liberalization. Also, in the post-liberalization Indian firms are relatively more inclined towards short-term debt intending to cope with the rapid fluctuations in interest rate.

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REFERENCES


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