

HOLDINGS OF LIQUID ASSETS, FIRM SIZE AND ACCESS TO EXTERNAL FINANCING:
AN ANALYSIS FOR THE EURO AREA

Holdings of liquid assets, firm size and access to external financing: an analysis for the euro area

The author of this article is Carmen Martínez-Carrascal of the Directorate General Economics, Statistics and Research.¹

Introduction

Firms hold liquid financial instruments in spite of their opportunity cost (they yield a lower return than alternative uses of the funds), for two basic reasons. First, to be able to make regular payments in the course of their ordinary business without having to liquidate other assets, so saving on transaction costs. Second, to cover themselves against the risk of an unexpected liquidity shortage, connected with unforeseen changes in cash flow, or of not being able to exploit new investment opportunities sufficiently quickly owing to a lack of funds. This saving with a precautionary motive will generally be more relevant for firms that have limited access to external financing, since other firms will be able to obtain the necessary funds on the capital markets.

Given that the availability of external funds can affect firms' decisions to invest in liquid assets, studying such decisions may help to determine whether the business sector is affected by external financing constraints and whether these affect some segments of the sector more than others.

Against this background, this article analyses whether the relationship between liquidity ratios and their determinants (especially those linked to saving with a precautionary motive) differs according to the size of the firm, since this is a characteristic that, a priori, may be expected to affect the availability of external funds. In principle one would expect the access to external financing of SMEs to be more limited than that of large firms, insofar as information asymmetries between lenders and borrowers may be more significant in the case of the former. The study is based on a sample of firms from various countries that operated in the euro area during the period 1998-2005.

The article is structured as follows. The second section briefly describes the historical evidence available in this area at the international level, the third section sets out the results of the study, and the fourth section summarises the main conclusions.

Review of the literature

Most empirical papers which analyse firms' decisions on investment in liquid assets in order to identify possible financial constraints for certain groups of firms have used US firm data. These studies generally investigate the response of firms' liquidity ratios (i.e. the proportion of holdings of cash and cash equivalents in the balance sheet) to cash flow and its variability. If the access of firms to capital markets were perfect, their holdings of liquid assets should not depend on investment opportunities or on cash flow, or on the variability of the latter (which would be a sign of the existence of saving with a precautionary motive). If, instead, firms anticipate restrictions in the availability of financing, they will hold a larger amount of liquidity on their balance sheets to be able to cover their possible future needs. As it is not possible to identify which agents face constraints in their access to funds, these studies classify firms a priori in accordance with different criteria that may be related to the existence of such constraints: the size of the business, the absence of a credit rating and the dividends paid (a smaller volume of the latter may be a sign of less availability of financing).

1. This article summarises the main conclusions of the paper "Cash holdings, firm size and access to external finance. Evidence for the euro area", *Documentos de Trabajo* No 1034, Banco de España, 2010. The data used were provided by the European Central Bank while the author was on a temporary assignment to this institution to carry out a project, which gave rise to the paper summarised here.

The results obtained using US firm samples point to the existence of differences in liquid asset holding policies that seem to be linked to differences in the degree of access to external funds. Thus, smaller firms, those without a credit rating and those that pay lower dividends (a priori, those most likely to be affected by financial constraints) tend to have higher liquidity ratios when their cash flows are more volatile and larger, something that is not observed for other firms.²

The only study of this kind for the euro area is that by Pál and Ferrando (2010), which focuses on the relationship between liquidity ratios and cash flow (without studying the link between the former and the volatility of the latter) for different business groups, which are categorised, as in previous studies, on the basis of firm size and, alternatively, according to whether or not they are listed. Their results, however, differ from those obtained for the United States. They find that holdings of cash (and equivalent instruments) respond positively to cash flow for all firms, this response being stronger among those that, according to the hypotheses described above, should face fewer credit constraints.

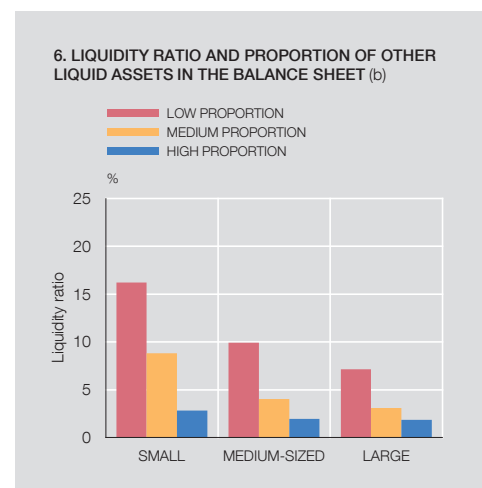
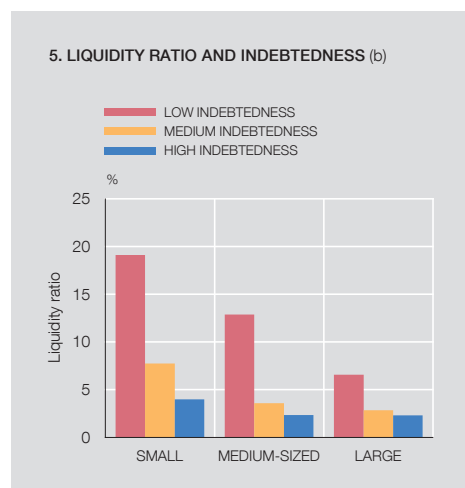
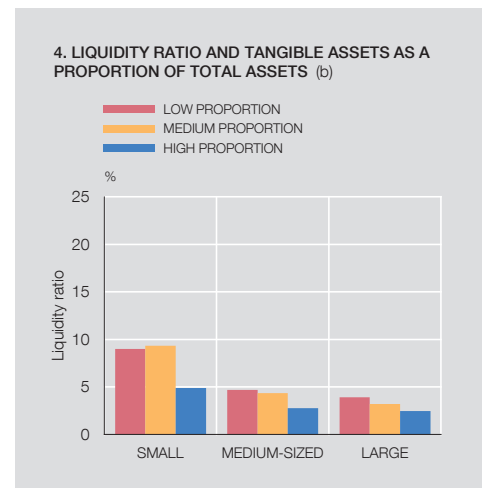
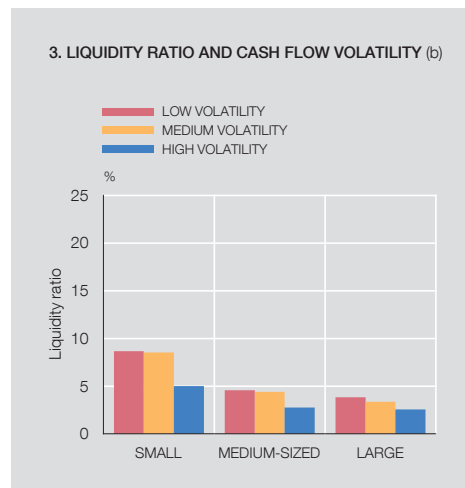
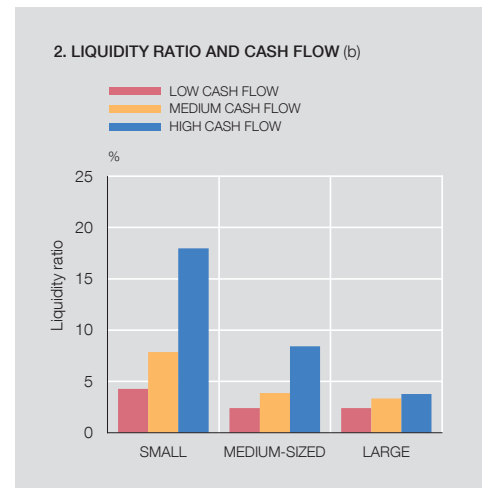
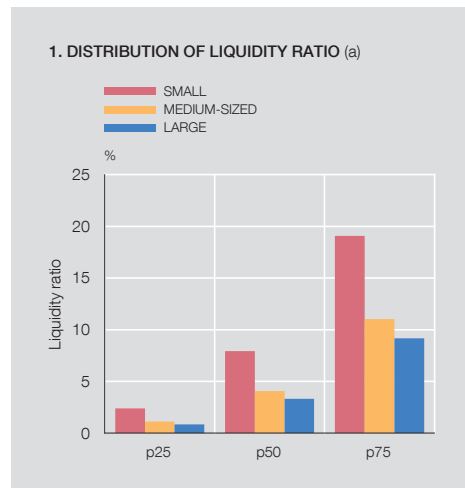
Descriptive evidence and econometrics

The analysis here is based on a sample of euro area firms drawn from Bureau van Dijk's AMA-DEUS database, during the period 1998-2005. There are 500,000 observations, corresponding to 85,000 firms, of which 82% are small, 14% medium-sized and 4% large.³ The variable of interest, as in previous studies in this field, is the liquidity ratio, which is defined as the ratio between cash and cash equivalents and total assets. In particular, the study considers the distribution of this variable within the sector and its relationship with a broader set of variables than in previous studies: the level and volatility of cash flow, the difference between the interest rate on bank loans to firms and that associated with M3⁴ (as a proxy for the opportunity cost of holding liquid assets), the level of indebtedness (which increases the opportunity cost of liquid instruments) and the proportion of total assets represented by other short-term instruments (which are the closest substitutes) and by tangible assets (which can be used as security and, therefore, facilitate the availability of external finance).

Panel 1 of Chart 1 shows the 25th, 50th and 75th percentiles of the liquidity ratio distribution for small, medium-sized and large firms. For each group and year, the 50th percentile can be considered illustrative of the situation of the typical firm, whereas the lower percentiles reflect that of firms with a smaller proportion of liquid funds on their balance sheets. As the chart shows, the values of this indicator are much higher for smaller firms. For example, for a representative small firm, its value is, on average, 2.5 times higher than that of a representative large firm.

The other panels of Chart 1 show the link, for each firm size, between the liquidity ratio and the different variables to which it is related. For example, Panel 2 shows the average value of this indicator for firms belonging to the highest, middle and lowest decile of the cash flow distribution (normalised by total assets). The first and last of these groups include the 10% of firms with the highest and lowest cash flow, respectively, for each year and size category. There is a positive relationship between these two variables, which is particularly marked in smaller firms.

2. See Almeida, Campello and Weisbach (2004) and Han and Qiu (2007). As indicated by Almeida, Campello and Weisbach (2009), the positive response of the liquidity ratio to cash flow in the case of firms with limited access to external funds would cease to exist if the possibility of investing in liquid instruments other than cash were introduced. For their part, Acharya, Almeida and Campello (2007) find that the relationship between these two variables depends on the correlation between the future cash flow and investment opportunities (if it is low, firms with restricted access to financing will tend to accumulate more liquid assets when they obtain larger cash flows). 3. The size of a firm has been defined in accordance with the criterion adopted by the European Commission, which takes into account the number of employees, the volume of assets and the volume of sales. 4. M3 includes cash in circulation in the euro area, bank deposits and other similar financial instruments.



SOURCES: AMADEUS and Banco de España.

a. p25, p50 and p75 denote, respectively, the average of the 25th, 50th and 75th percentiles of the liquidity ratio distribution for the period 1996-2005.

b. Average, for the period 1998-2005, of the median liquidity ratio for firms with the following levels of the relevant variable: high (above the 90th percentile of the distribution), medium (includes those firms for which the ratio is between the 45th and 55th percentiles) and low (comprises the 10% of the sample each year with the lowest level of this indicator).

	LARGE FIRMS	MEDIUM-SIZED FIRMS	SMALL FIRMS	Difference in coefficients: small vs large firms
	Coefficient	Coefficient	Coefficient	
Liquidity in the previous period	0.624***	0.570***	0.809***	**
Liquidity lagged by two periods	0.087***	0.188***	0.03	Not significant
Cash flow/total assets	0.082*	0.183***	0.235***	**
Difference in return (b)	-0.844***	-0.455**	-0.375**	**
Cash flow volatility _{it} (%)	0.07	0.18	0.305***	*
Other liquid assets/total assets	-0.069*	-0.041*	-0.01	*
Tangible assets/total assets	0.01	-0.049*	-0.046***	**
Indebtedness	-0.01	-0.01	-0.013*	Not significant
Number of firms	3,382	11,255	69,459	
Number of observations	21,477	71,853	421,200	

SOURCES: AMADEUS and Banco de España.

(a). *, **, *** indicates that the coefficient is significant for a confidence level of 90%, 95% and 99% respectively.

(b) Difference between the interest rate on bank loans to firms and that associated with the monetary aggregate M3.

The econometric results point in this same direction. Thus, Table 1, which gives the coefficients obtained when estimating an equation for the proportion of liquid instruments on the balance sheet as a function of their determinants, shows that the coefficient associated with cash flow is much higher (nearly three times as high) in small firms than in large firms, this difference being statistically significant (see the last column of the table).

Panel 3 of Chart 1 shows the median liquidity ratio for different groups of firms as a function of cash flow volatility, which is used here as a proxy for the risk of adverse shocks to firms' income flows. This descriptive evidence does not seem to indicate a positive link between these two variables. However, econometric analysis shows that, when we control for the other determinants, this relationship does become apparent, although it is only significant in smaller firms (see Table 1). Specifically, in the latter, an increase of one standard deviation in this variable is associated with a rise of 0.8 percentage points in the liquidity ratio (9.5% of the average value). This result, which is in line with that reported by Han and Qui (2007) for the United States, might suggest that access to external finance is more limited for smaller firms, which would lead them to hold more liquid assets on their balance sheets as the likelihood of a fall in income increases, despite the opportunity cost involved.

Further, Panel 4 of the chart shows a negative relationship between the proportion of liquid instruments and that of tangible assets on the balance sheet. The econometric results also point in the same direction in the case of small and medium-sized firms, but not in the case of large firms, for which there is no clear link between these variables (see Table 1). This may indicate that access to external finance is more tightly linked to the availability of collateral for smaller firms, in line with the evidence reported by Coluzzi, Ferrando and Martínez-Carrascal (2008).

Both the descriptive evidence presented in Panel 5 of Chart 1 and the econometric findings indicate a negative relationship between liquidity and indebtedness (which raises the opportunity cost of holding cash on the balance sheet). However, as in the case of cash flow volatility and the tangible assets ratio, the link between these two variables is more marked and statistically significant only for small firms (see Table 1).

Also, both the descriptive analysis in Panel 6 of Chart 1 and the econometric analysis show, as expected, a negative relationship between the liquidity ratio and the closest cash substitutes on the balance sheet (i.e. the assets that can most readily be converted into cash, which are those with maturities below one year). Again, the link is not the same for all corporate sizes. Here it is most marked for larger firms (see Table 1).

Lastly, the econometric specification also includes the difference between the interest rate on bank loans to firms and that associated with the monetary aggregate M3, which proxies the cost of holding cash and other similar forms of investment. In line with expectations, evidence is found of a negative relationship between this variable and the liquidity ratio. An analysis of contributions shows that the changes in this indicator do in fact have a dominant influence when it comes to explaining the changes in firms' holdings of liquid assets in the period analysed. Although their impact on holdings of liquid assets is high for all firm sizes, it seems to vary considerably with their size, being more pronounced for large firms (the coefficient estimated for these is more than twice that for small firms). This result also points to greater financing difficulties for SMEs, whose liquid assets are less sensitive to changes in the opportunity cost of holding them than in the case of larger firms, which have less need to hold savings for precautionary reasons.

Conclusions

The evidence presented in this article points to major differences in firms' policies of investing in liquid assets depending on the size of the firm. This could have to do with firms' differing degrees of access to external financing. Thus, small firms' holdings of cash and equivalent instruments seem to be more influenced by the precautionary motive, since they show a stronger link to cash flow volatility. Furthermore, for these firms a negative relationship has been detected between the liquidity ratio and the proportion of tangible assets held on their balance sheet, which can be used as collateral and thus make it easier to obtain credit. By contrast, decisions to invest in liquid assets made by large firms with better access to the capital markets seem to depend more on variations in the opportunity cost of those funds.

These results seem to suggest that, in general, small firms tend to experience more restricted access to external financing in comparison with larger firms, a circumstance which could be related to the greater difficulty lenders have gathering enough reliable information on these borrowers. This would lead them to hold on their balance sheets a higher proportion of liquid assets, with a lower return than alternative investments. Given this situation, it may make sense to introduce economic policy measures to mitigate these problems. Although this objective is beyond the scope of this article, a course of action worth considering would be to improve the quantity and quality of the accounting information on small firms, whose accounts currently contain less detail than those of larger firms and, in addition, are mostly unaudited.

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