

Managing Liquidity Risk

An Asset Management Perspective



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Liquidity Risk: An Asset Management Perspective

- Liquidity: a source of risk but also of profitability
- Managing liquidity risk in a fund

Liquidity: a source of risk but also of profitability

- Liquidity risk is a financial risk due to uncertain liquidity
 - **Market liquidity** risk = risk arising from unpredictable transaction costs
 - **Funding liquidity** risk = risk that an institution will have to meet uncertain cash requirements

- Theoretically, this additional source of risk should be priced in asset returns: **liquidity premium**
 - **CAPM with liquidity factor** (Acharya and Pedersen (2005))
 - 3 sources of additional risk due to the covariation of asset's i liquidity costs / returns with market's liquidity costs / returns

$$\begin{aligned}
 E_t(r_{t+1}^i) = & r^f + E_t(c_{t+1}^i) + \lambda_t \frac{\text{cov}_t(r_{t+1}^i, r_{t+1}^M)}{\text{var}_t(r_{t+1}^M - c_{t+1}^M)} + \lambda_t \frac{\text{cov}_t(c_{t+1}^i, c_{t+1}^M)}{\text{var}_t(r_{t+1}^M - c_{t+1}^M)} \\
 & - \lambda_t \frac{\text{cov}_t(r_{t+1}^i, c_{t+1}^M)}{\text{var}_t(r_{t+1}^M - c_{t+1}^M)} - \lambda_t \frac{\text{cov}_t(c_{t+1}^i, r_{t+1}^M)}{\text{var}_t(r_{t+1}^M - c_{t+1}^M)}.
 \end{aligned}$$

Earning the liquidity premium

■ How much liquidity premium can be earned? Empirical evidence

- Stocks: Pastor and Stambaugh (2003), over 34-year, 7.5% average overperformance of less liquid stocks (adjusted for other factors: market, size, value, momentum)
Amihud (2002), Brennan and Subrahmanyam (1996)
- Corporate bonds: Chen et al. (2005), liquidity premium an important component of corporate bonds yield spread
- Nominal Government bonds: Longstaff (2004), yield differences between State guaranteed Agencies, “off” and “on the run” securities
- Inflation Linked Government bonds: Campbell, Shiller and Viceira (2009)
- Hedge funds: Sadka (2010), funds that significantly load on liquidity risk outperform those with low-loading funds on the period 1994-2008, the reverse during the Subprime crisis

⇒ Illiquid assets earn a liquidity premium, that may compensate for higher transaction costs (depending on your rebalancing frequency)

Strong underperformance during crises

- Market and funding liquidity suddenly dry up during financial crises
 - Liquidity crises follow prolonged periods of **self-reinforcing “artificial liquidity”**
 - Result of rising asset prices and falling volatility, build-up of risk-taking, leverage and overextension in balance-sheets

- “Liquidity spirals”
 - Strong interactions between **funding and market liquidity in crises**
 - Shocks to funding liquidity lead to asset sales, depress asset prices, with dire consequences for market liquidity.
 - Shocks to market liquidity lead to higher margin calls, increasing funding liquidity risk as outflows rise.
 - Capital and collateral requirements introduce an important linkage between market and funding liquidity of intermediaries
 - Process self-fulfilling and self-reinforcing

Strong underperformance during crises

■ Strong relation between liquidity and correlation/volatility risk

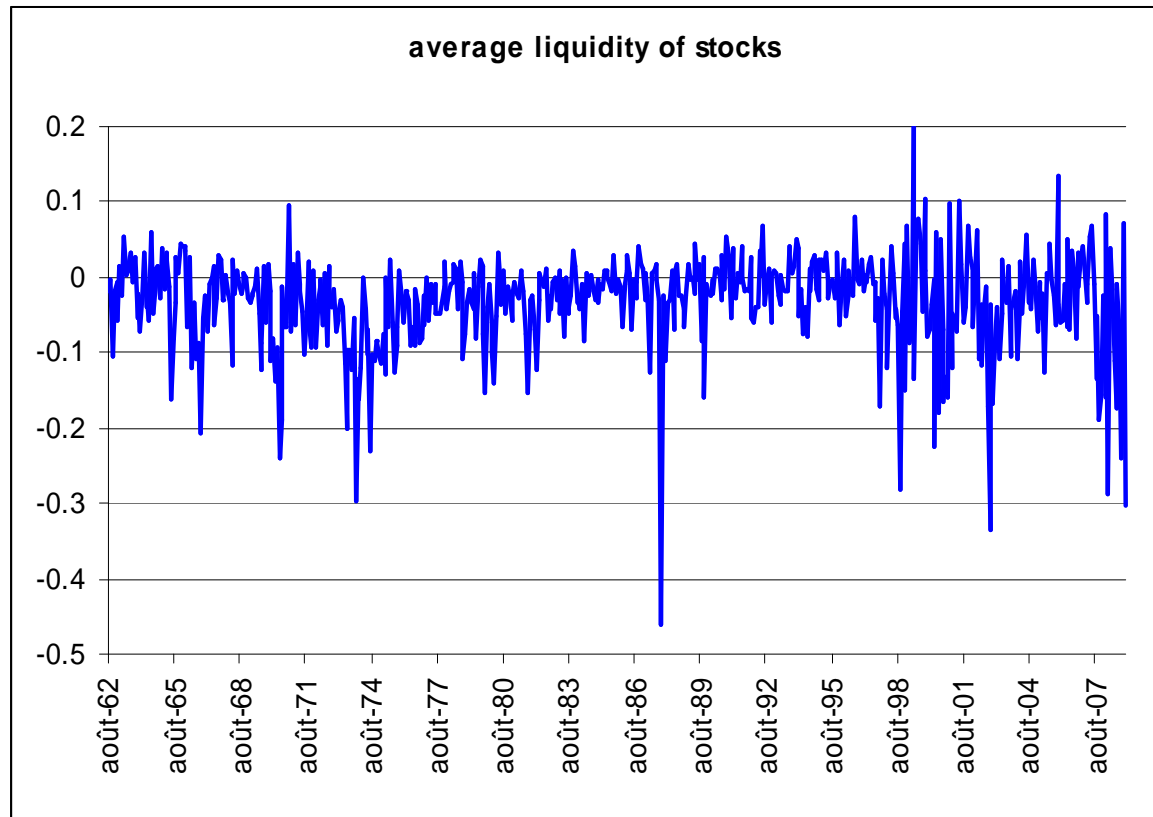
- In normal regimes, volatilities and correlations are driven by macroeconomic fundamentals
- In illiquid regimes, correlations also reflect the liquidity position of market participants through *margin requirements, forced sales, etc.*
- This causes higher correlation than induced by fundamentals
 - Ex: correlations between currencies and risky assets (corporate bonds and equities) due to unwinding of carry trades for example

■ Consequences for asset returns

- Assets with poor liquidity are subject to flight to quality, and higher commonality with average market liquidity
- Asset returns have a higher sensibility to market liquidity

⇒ Stronger commonality across securities: liquidity risk diversification disappears

Strong underperformance during crises



Source: Pastor and Stambaugh (2003)

Risk/return tradeoff: results for the mutual fund industry

- Depends on the rebalancing frequency
- Empirical evidence shows that the **heterogeneity in mutual funds performances is not explained by liquidity** (Chen et al. (2001), Massa and Phalippou (2005))
- In average, illiquid funds earn less than 1% premium per year over liquid funds (Massa and Phalippou (2005), study period 1983-2001)
 - This difference falls to zero, when taking into account higher expense ratio for illiquid funds
- Illiquid funds are underperforming during crises
 - Underperformance by 1.4% per month during crises periods (top vs bottom deciles)

Guidelines for a safe liquidity risk management

■ No regulatory requirements yet

- Basel II has been focusing of solvency ratios, not liquidity ratios
- Recommendations have been made

■ Mutual Funds' industry working in the direction of **ALM of liquidity**

- Quantify the degree of liquidity of asset in the funds

Liquidity of individual assets

Which assets can be converted into cash within the next 5-10-30 days?

Traditional indicators : bid ask spreads, price impact, volumes, etc. should be monitored

Liquidity diversification across assets

- Identify and categorize the liabilities that might create liquidity exposure

Liquidity needs of each category of final investors

Diversification across investors

- Calculate the surplus or liquidity shortfall

Short term liabilities subtracted to liquid assets

Guidelines for a safe liquidity risk management

■ Stress-Tests

- If market or economic conditions change, in case of crisis, how do liquidity needs and cash availability change?
- Ex: simultaneous drying up of market liquidity in several previously highly liquid markets
- Ex: severe sellings of fund's shares (ex: run-off of retail investors)
- Ex: scenarios taking into account non linear interactions between the 2

■ Redefine the policy of each fund according to funding liquidity needs

- Maintain a cushion of high quality liquid assets for the most liquid funds to be held as insurance against liquidity stress scenarios
- Restrict selling policy for the least liquid funds

Liquidity Risk: more challenging?

- **Managing liquidity risk is becoming more challenging**
 - Balance sheets grew in complexity
 - Dependence upon capital markets for funding rose strongly

- **The recent crisis has pointed the need for new set of liquidity risk management guidelines**

- **Liquidity risk has to be managed in relation to market, credit and other risks**
 - Difficult to isolate liquidity risk, strongly correlated to other risks
 - Non linear relationships during crises times: self-fulfilling and self-reinforcing phenomenon