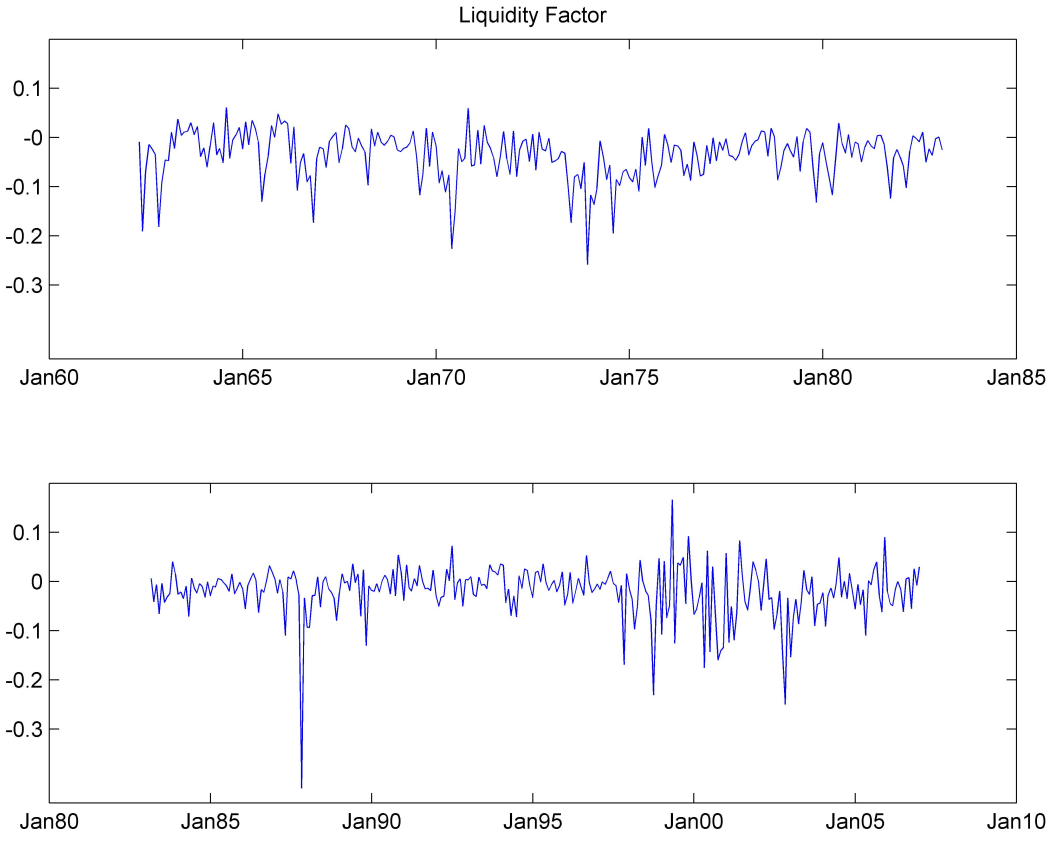
FINC312: Homework 7

Solution

1 Testing a Liquidity Factor Model

1. The liquidity factor had its lowest levels on November 1973 and October 1987. November 1973 was the first full month of the Mideast oil embargo, and October 1987 included the Black Monday stock market crash.



2. The innovation series is the fitted residual from a regression of the differences in the level series on the lagged differenced level series and the lagged level series (with scaling adjustments). The comovement in the innovation series and returns can be used as a measure of liquidity risk.

3. The historical average return for the market is 0.46%.

4. The factor loadings are:

Momentum Portfolio	b_{liq}	b_{mkt}	$\hat{\mu}$
$Losers$	-0.020	1.358	0.0016
R_2	-0.014	1.136	0.0071
R_3	-0.003	0.985	0.0083
R_4	-0.004	0.938	0.0088
R_5	0.023	0.887	0.0077
R_6	0.060	0.902	0.0088
R_7	0.053	0.887	0.0091
R_8	0.029	0.910	0.0114
R_9	0.039	0.969	0.0123
$Winners$	0.000	1.193	0.0162
$Winners - Losers$	0.020	-0.165	0.0145

5. The liquidity factor loadings are lowest for the losing portfolios. The loadings describe the sensitivity of the portfolio's returns to a shock to the liquidity factor. When liquidity is high (and positive), the losers portfolio returns are less than the winners portfolio returns. However, the standard error on b_{liq} for the Winners-Losers portfolio is 0.063, so the difference is not statistically significant.

6. Historical averages shown in the table above.

7. The estimated market prices of risk are:

	λ	t-statistic
Constant	0.012	0.89
Market	-0.0033	-0.27
Liquidity	0.031	0.44
R^2	0.12	

8. The prices of risk λ_{mkt} and λ_{liq} are the expected return premium for bearing market and liquidity risk respectively. Neither are statistically significant from zero and the price of market risk is negative. The risk-free rate, λ_0, is 1.2% a month, which is very high.

9. Given the statistical insignificance of the prices of risk, it appears that liquidity risk is not priced in the cross-section of momentum portfolios. Also, liquidity does not seem to fully explain the momentum results since the liquidity model-predicted returns fail to capture the dispersion of the historical momentum returns.