

Liquidity as an Investment Style

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“Liquidity as an Investment Style”

Roger G. Ibbotson, Zhiwu Chen, Daniel Y.-J. Kim, and Wendy Y. Hu

Financial Analysts Journal May/June 2013

Liquidity as an Investment Style



CFA Institute Names Top *Financial Analysts Journal* Articles with Annual Graham and Dodd Awards

Best Article of 2013 *Suggests Liquidity Be Included as a Benchmark Investment Style alongside Size, Growth/Value, and Momentum in Studies of Stock Returns*

NEW YORK, February 20, 2014 — “[Liquidity as an Investment Style](#),” by Roger G. Ibbotson, Zhiwu Chen, Daniel Y.-J. Kim, and Wendy Y. Hu, was selected as the best article in the prestigious Graham and Dodd Awards, a CFA Institute program honoring the top *Financial Analysts Journal* articles each year. The article, published in the May/June 2013 issue of the *FAJ*, finds that liquidity is an important indicator of long-run returns. The authors suggest that liquidity be included in future asset price studies as an investment factor or style. Making their

Sources: CFA Institute, 2/20/2014 press release.

What is Meant by Liquidity?

Liquidity in the Financial System

- High Savings Rates
- Low Interest Rates
- Easy Access to Capital

Liquidity in Trading

- Low Transactions Costs
- High Trading Volume
- Low price impact for Large orders

Liquidity in Valuation

- Pay extra price for liquid securities
- Extra expected returns for less liquid securities

Liquidity and Valuation

Liquid securities

- Easier to trade with lower market impact costs
- Higher priced for same set of cash flows
- Desired for rapid turnover investors

Less Liquid securities

- More difficult to trade
- Lower priced for same set of cash flows
- Higher expected returns, great for longer term investors

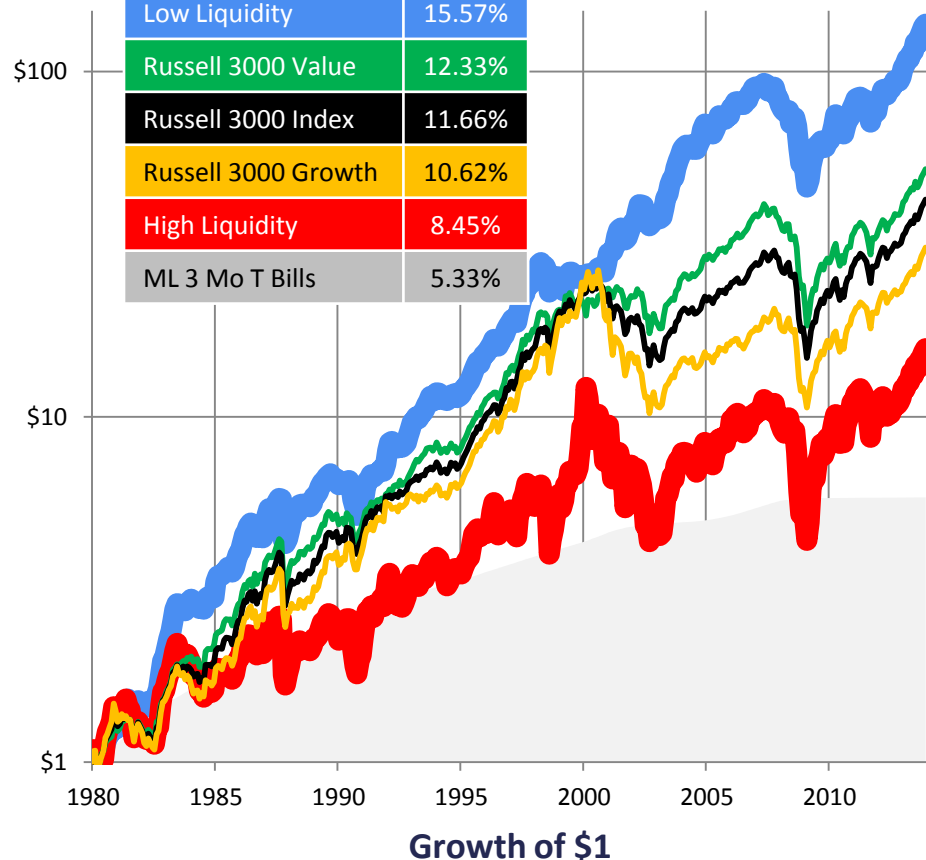
“Don’t pay for liquidity you do not need”

The Liquidity Premium

1980 – 2013

Compound Annual Return

Low Liquidity	15.57%
Russell 3000 Value	12.33%
Russell 3000 Index	11.66%
Russell 3000 Growth	10.62%
High Liquidity	8.45%
ML 3 Mo T Bills	5.33%



Stocks, Bonds, Bills and Inflation

- First highlighted traditional market premiums
- Equity, value, size and liquidity premiums

What is the Liquidity Premium?

- More liquid assets are priced at a premium
- Less liquid assets are priced at a discount, thus having higher expected returns

Foundation in Academic Literature

- Thirty years of literature supporting higher returns
 - Ibbotson, Chen, Kim & Hu, 2013
 - Idzorek, Xiong, & Ibbotson, 2012
 - Pastor & Stambaugh, 2003
 - Datar, Naik & Radcliffe, 1998
 - Amihud & Mendelson, 1991
 - Ibbotson, Siegel & Diermeier, 1984
- Impetus for investments in venture capital, private equity, and other alternative investments

- Source Low Liquidity and High Liquidity: Ibbotson, Chen, Kim & Hu, "Liquidity as an Investment Style" *Financial Analysts Journal*, May/June 2013.
- Data update Zebra Capital.

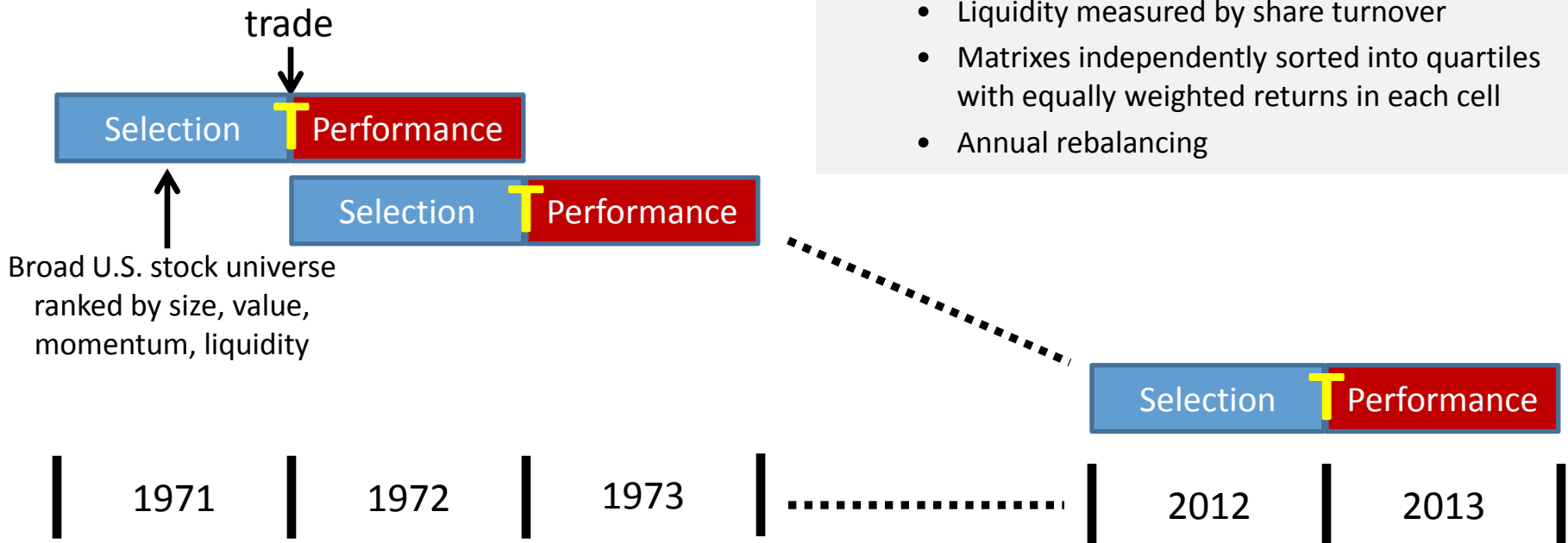
Why is Liquidity a Style?

William F. Sharpe (<i>FAJ</i> 1992) Investment Style Criteria	Liquidity
1. “Identifiable before the fact”	Investors prefer liquidity and therefore there is a strong economic justification “before the fact”
2. “Not easily beaten”	Our results show that less liquid stocks have higher returns with lower volatility than more liquid stocks
3. “A viable alternative”	Liquidity differs from other accepted styles with more than comparable premiums (size, value, & momentum)
4. “Low in Cost”	Portfolios are stable and can be managed with infrequent rebalancing and low cost

Study Methodology

Up to 3500 U.S. stocks, 1972-2013

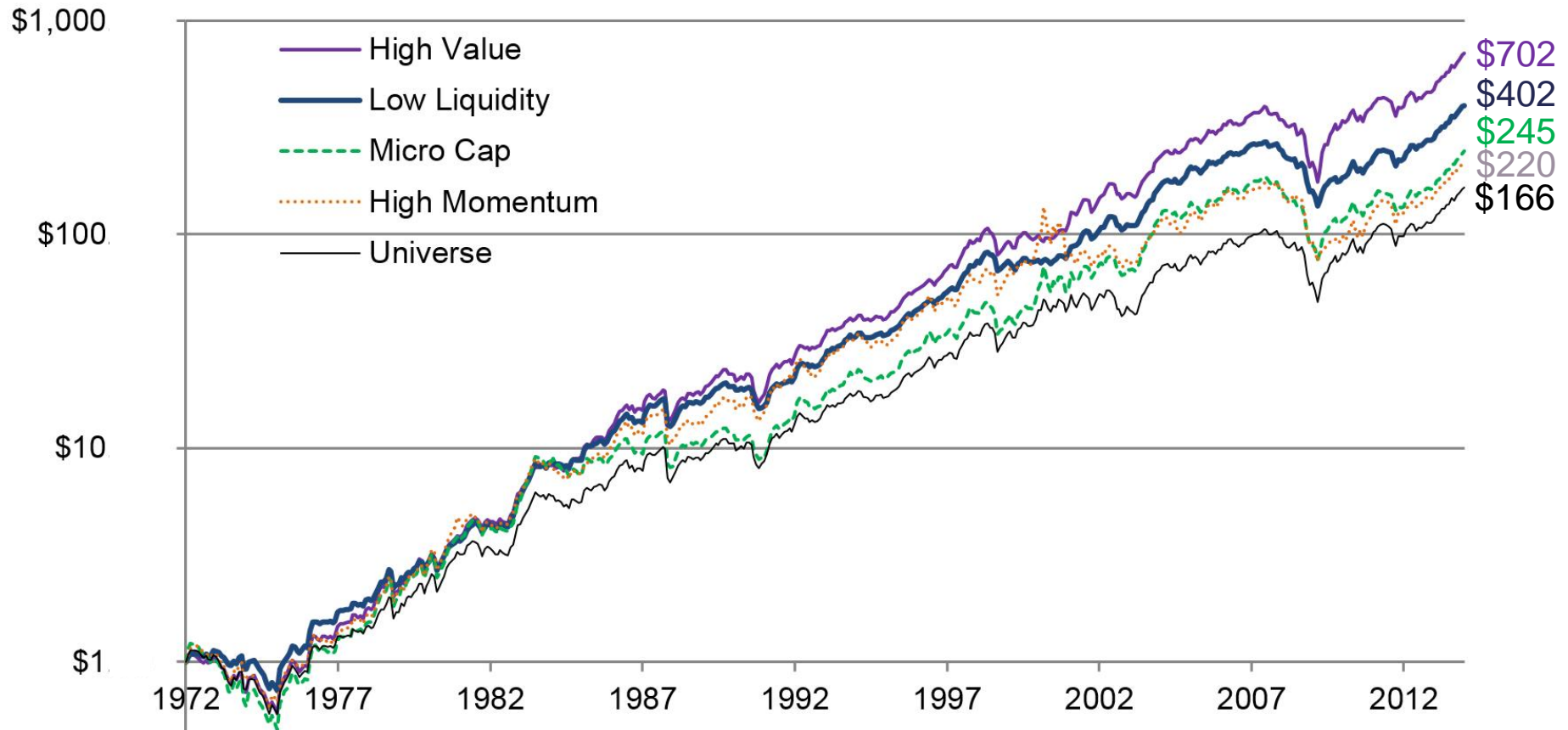
- Size measured by year-end capitalization, value measured by E/P ratios, momentum measured by previous year returns
- Liquidity measured by share turnover
- Matrixes independently sorted into quartiles with equally weighted returns in each cell
- Annual rebalancing



Source: Ibbotson & Kim, 2014 Update, "Liquidity as an Investment Style" [Ibbotson, Chen, Kim & Hu, *FAJ* 2013.]

U.S. Quartile Portfolios

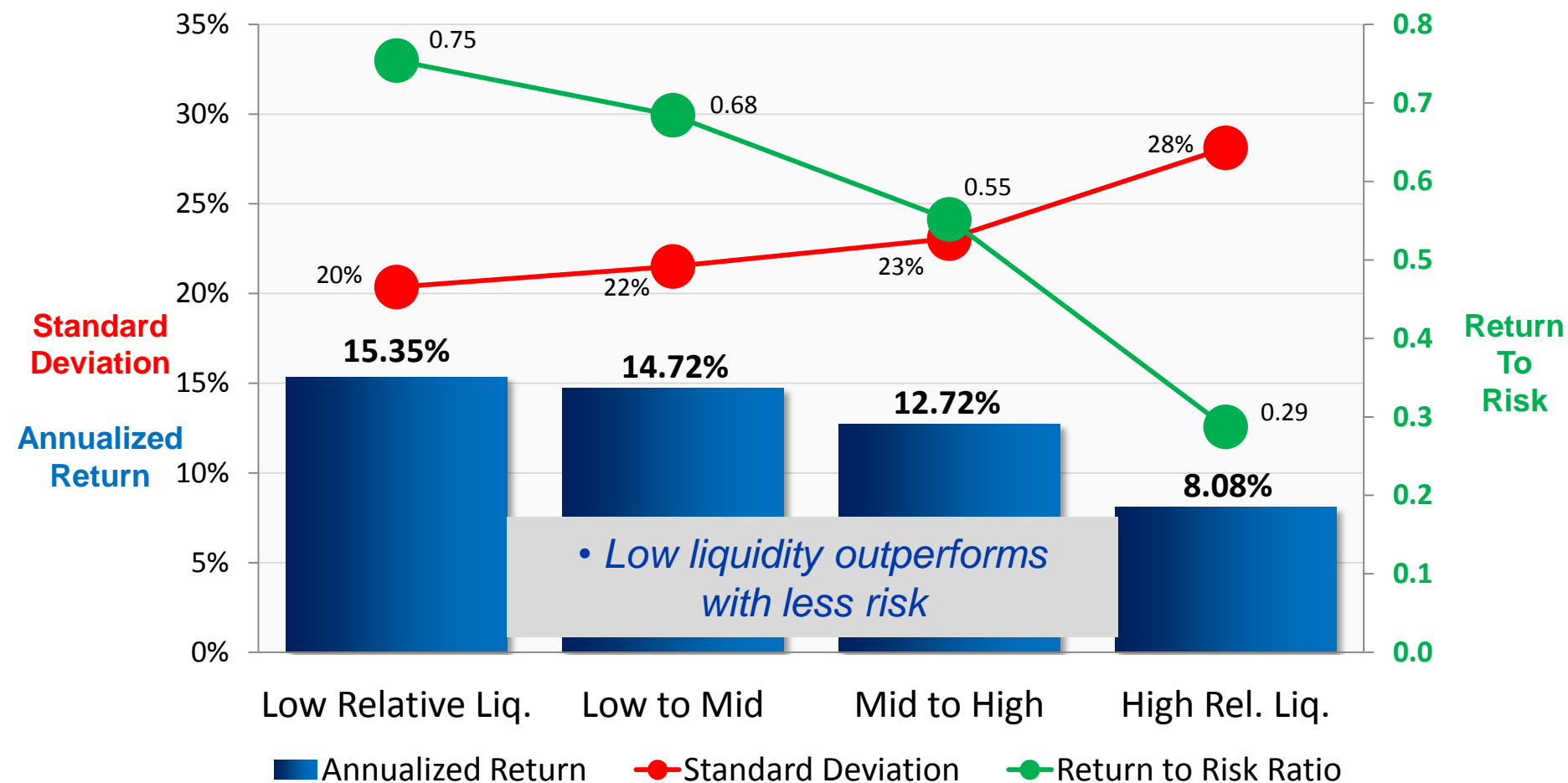
1972-2013



Source: Ibbotson & Kim, 2014 Update, "Liquidity as an Investment Style" [Ibbotson, Chen, Kim & Hu, *FAJ* 2013.]

Liquidity Quartile Portfolios

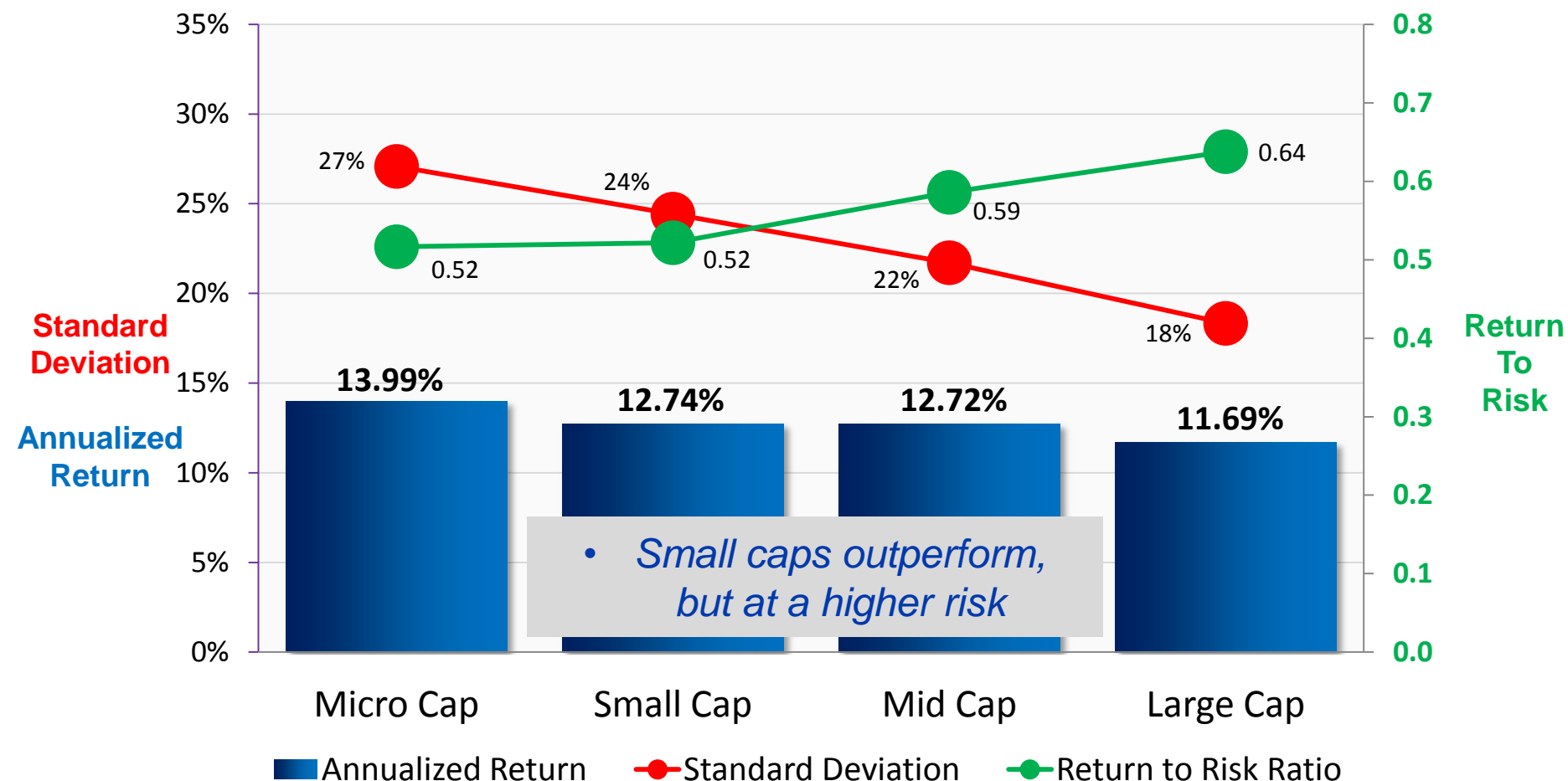
1972-2013



Source: Ibbotson & Kim, 2014 Update, "Liquidity as an Investment Style" [Ibbotson, Chen, Kim & Hu, *FAJ* 2013.]

Size Quartile Portfolios

1972-2013



Source: Ibbotson & Kim, 2014 Update, "Liquidity as an Investment Style" [Ibbotson, Chen, Kim & Hu, *FAJ* 2013.]



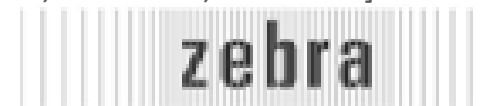
Size vs. Liquidity

1972-2013

			Liquidity				Liquidity Premium
			Low		High		
			1	2	3	4	
Size	Micro	1	16.3%	16.9%	11.1%	1.5%	14.8%
	Small	2	15.9%	14.9%	12.6%	6.5%	9.4%
		3	14.3%	14.3%	13.1%	8.7%	5.6%
	Large	4	11.8%	12.3%	11.9%	9.2%	2.6%
Size Premium		Q1–Q4	4.5%	4.7%	-0.8%	-7.7%	

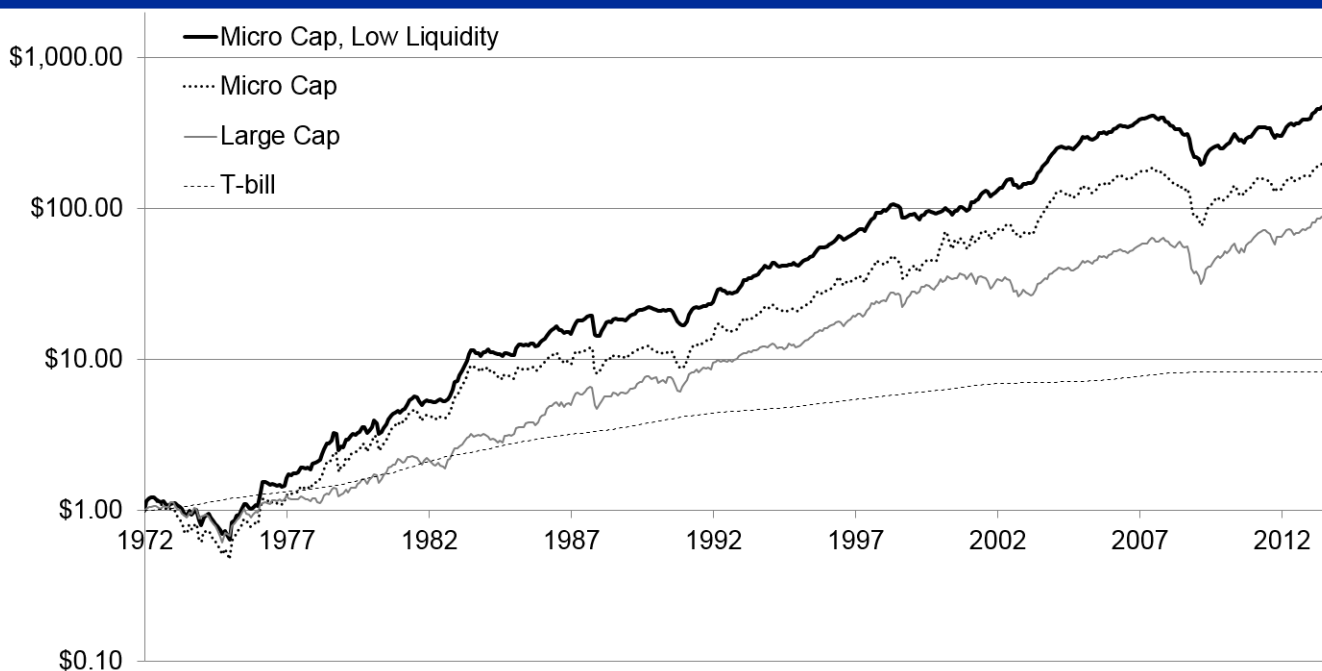
Within each market cap class, relatively low liquidity outperforms.

Source: Ibbotson & Kim, 2014 Update, "Liquidity as an Investment Style" [Ibbotson, Chen, Kim & Hu, *FAJ* 2013.]



Small-Cap Liquidity Portfolio

1972-2013



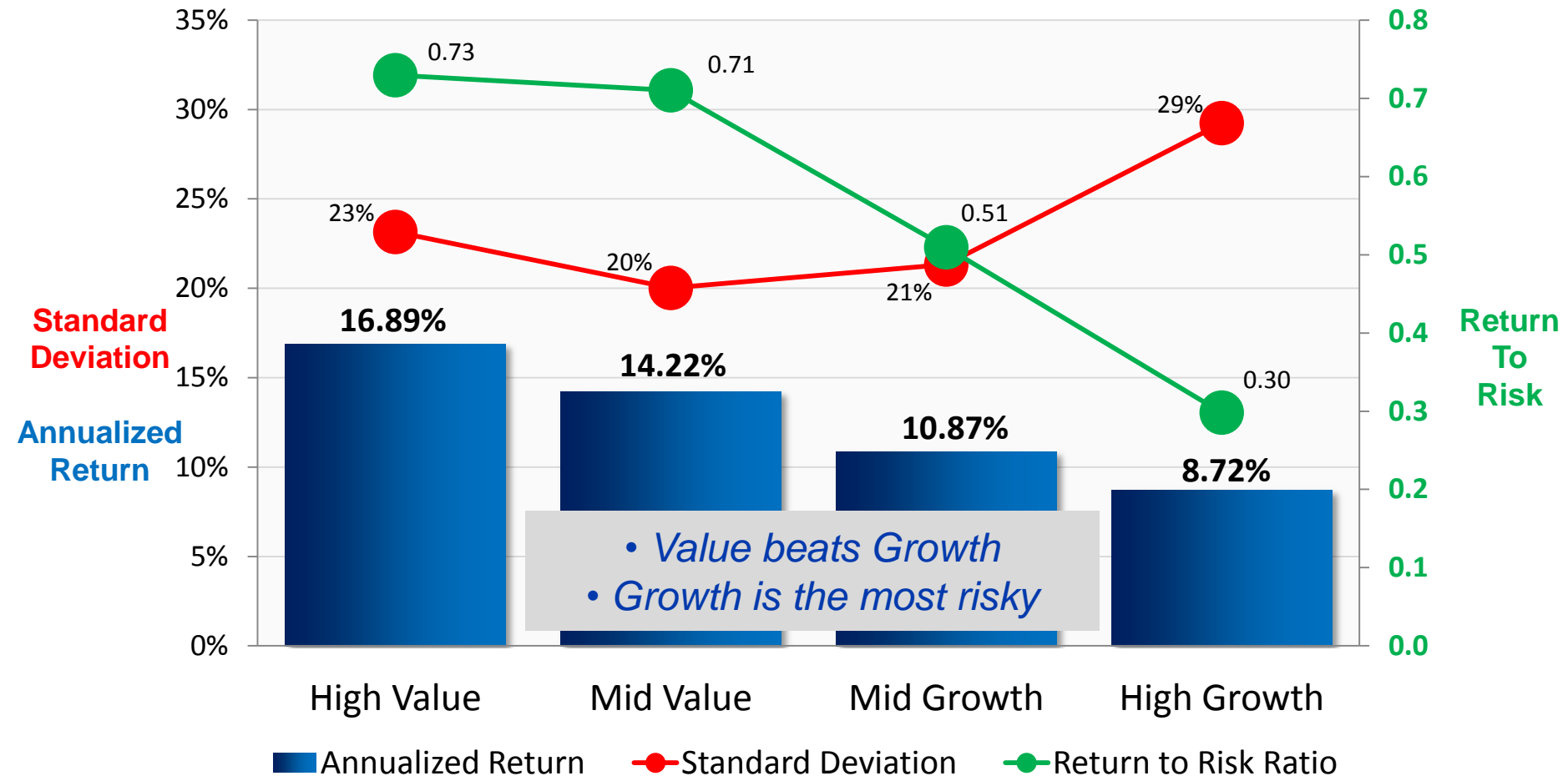
Annualized Alpha	Market M-RF	Size	Value	Momentum	R ²
2.92%*	0.71	0.77	0.48	0.01	78.1%

*t-stat = 2.28 (Statistically significant at 5% level).

Source: Ibbotson & Kim, 2014 Update, "Liquidity as an Investment Style" [Ibbotson, Chen, Kim & Hu, *FAJ* 2013.]

Value Quartile Portfolios

1972-2013



Source: Ibbotson & Kim, 2014 Update, "Liquidity as an Investment Style" [Ibbotson, Chen, Kim & Hu, *FAJ* 2013.]



Value vs. Liquidity

1972-2013

			Liquidity				Liquidity Premium
			Low		High		Q1–Q4
			1	2	3	4	
Value	Value	1	19.3%	17.5%	16.6%	10.8%	8.5%
		2	15.4%	15.0%	13.3%	12.4%	3.0%
	Growth	3	13.4%	12.9%	10.8%	7.2%	6.2%
		4	11.0%	13.3%	9.6%	3.4%	7.6%
Value Premium		Q1–Q4	8.3%	4.2%	7.0%	7.4%	

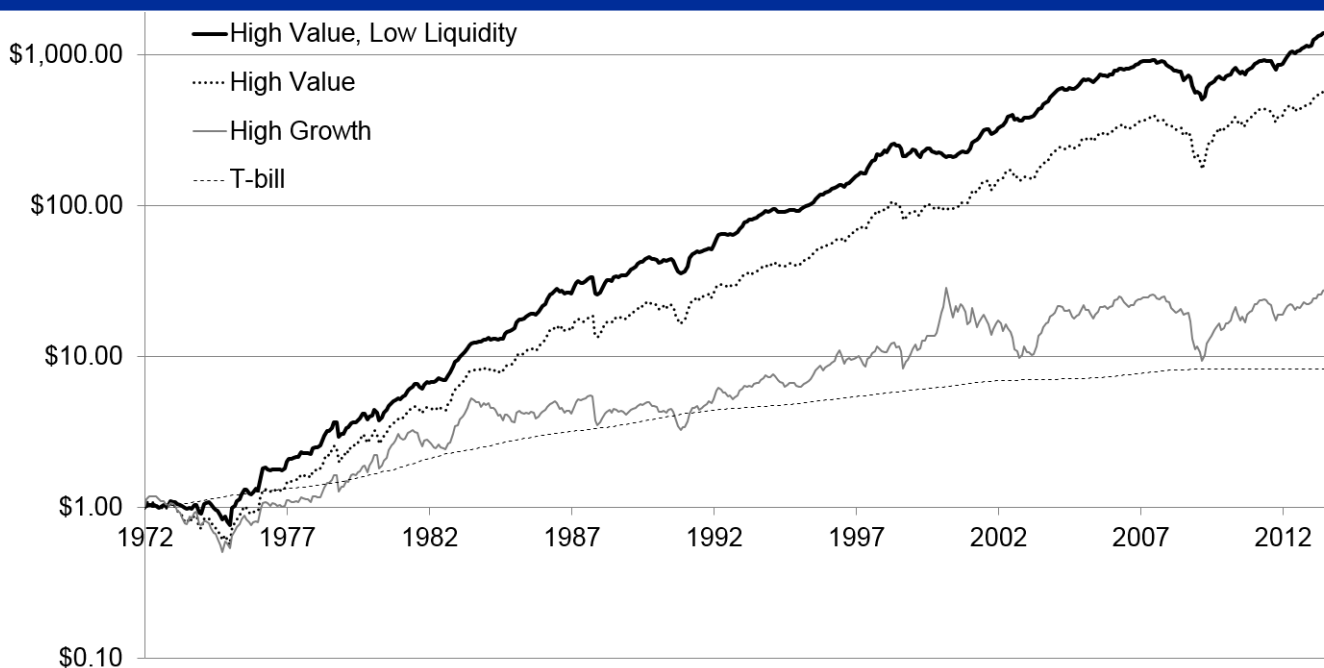
Both liquidity and value predict returns.

Source: Ibbotson & Kim, 2014 Update, "Liquidity as an Investment Style" [Ibbotson, Chen, Kim & Hu, *FAJ* 2013.]



Value-Based Liquidity Portfolio

1972-2013



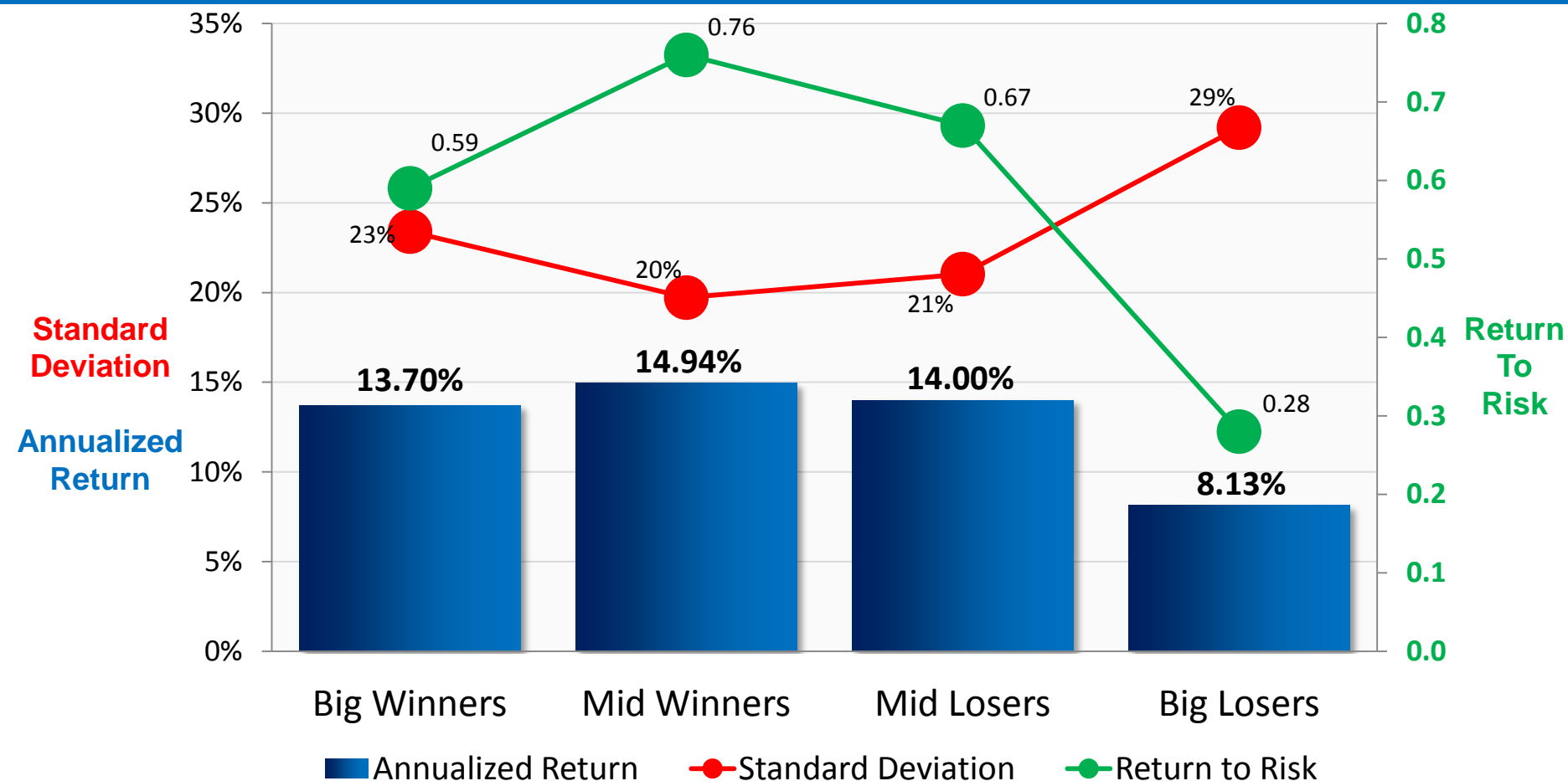
Annualized Alpha	Market M-RF	Size	Value	Momentum	R ²
5.66%*	0.72	0.56	0.56	-0.03	81.9%

*t-stat = 5.31 (statistically significant at 5% level).

Source: Ibbotson & Kim, 2014 Update, "Liquidity as an Investment Style" [Ibbotson, Chen, Kim & Hu, *FAJ* 2013.]

Momentum Quartile Portfolios

1972-2013



Source: Ibbotson & Kim, 2014 Update, "Liquidity as an Investment Style" [Ibbotson, Chen, Kim & Hu, *FAJ* 2013.]



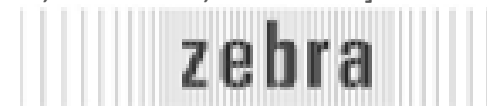
Momentum vs. Liquidity

1972-2013

			Liquidity				Liquidity Premium
			Low		High		
			1	2	3	4	Q1–Q4
Mom.	Winners	1	16.9%	16.1%	13.8%	9.3%	7.6%
		2	16.6%	16.1%	14.1%	9.8%	6.8%
		3	15.6%	15.3%	13.6%	8.8%	6.8%
	Losers	4	11.3%	10.4%	8.6%	4.0%	7.3%
Momentum Premium		Q1–Q4	5.6%	5.7%	5.3%	5.3%	

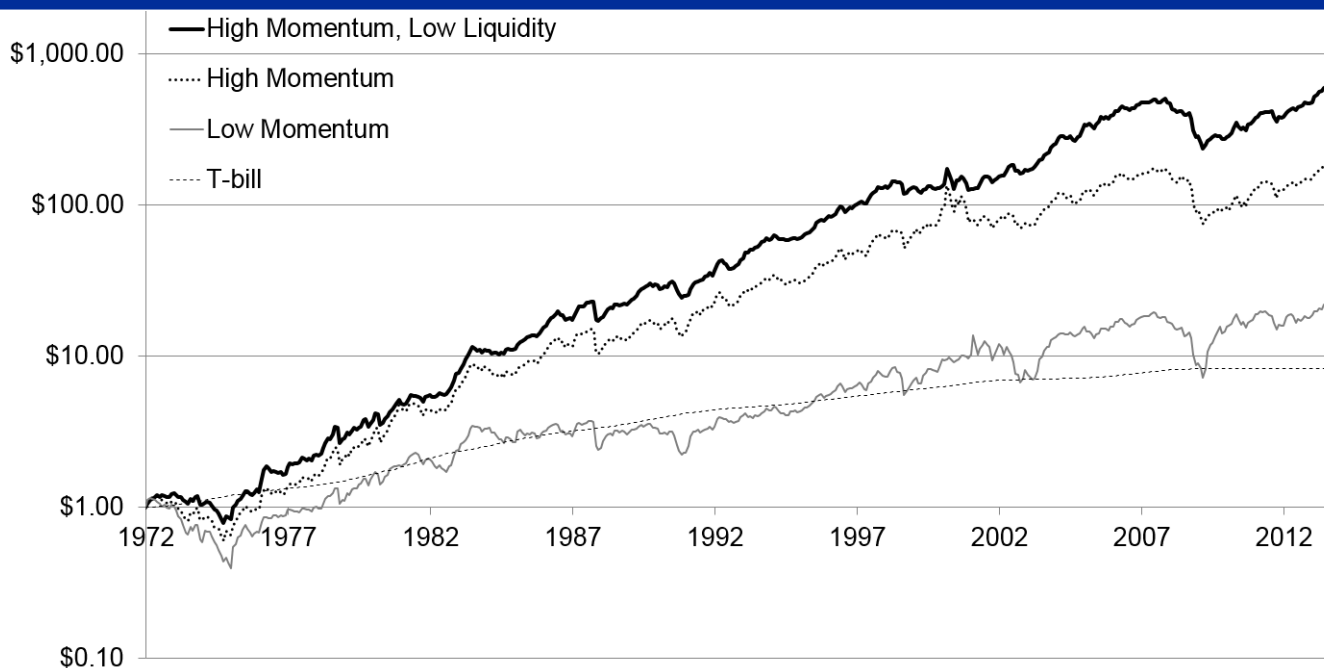
The liquidity premium is consistent within each momentum quartile.

Source: Ibbotson & Kim, 2014 Update, "Liquidity as an Investment Style" [Ibbotson, Chen, Kim & Hu, *FAJ* 2013.]



Momentum-Based Liquidity Portfolio

1972-2013



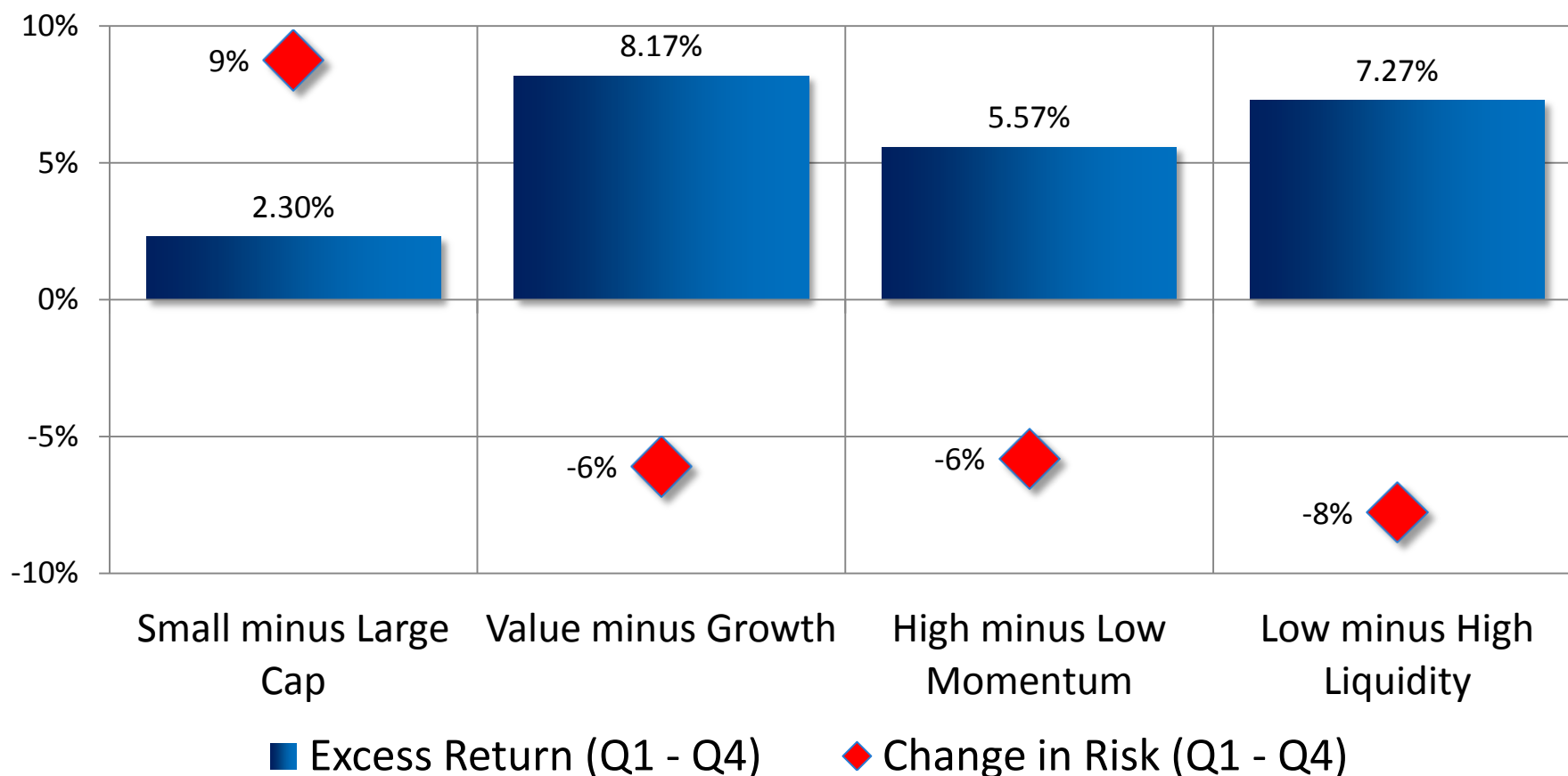
Annualized Alpha	Market M-RF	Size	Value	Momentum	R ²
2.06%*	0.79	0.74	0.30	0.23	85.9%

**t*-stat = 1.93 (statistically significant at 5% level, one-tailed test)

Source: Ibbotson & Kim, 2014 Update, "Liquidity as an Investment Style" [Ibbotson, Chen, Kim & Hu, *FAJ* 2013.]

Style Premia

1972-2013



Source: Ibbotson & Kim, 2014 Update, "Liquidity as an Investment Style" [Ibbotson, Chen, Kim & Hu, *FAJ* 2013.]

Liquidity Regressions on Factors

1972-2013

Liquidity can be expressed as a long/short or a long only factor.

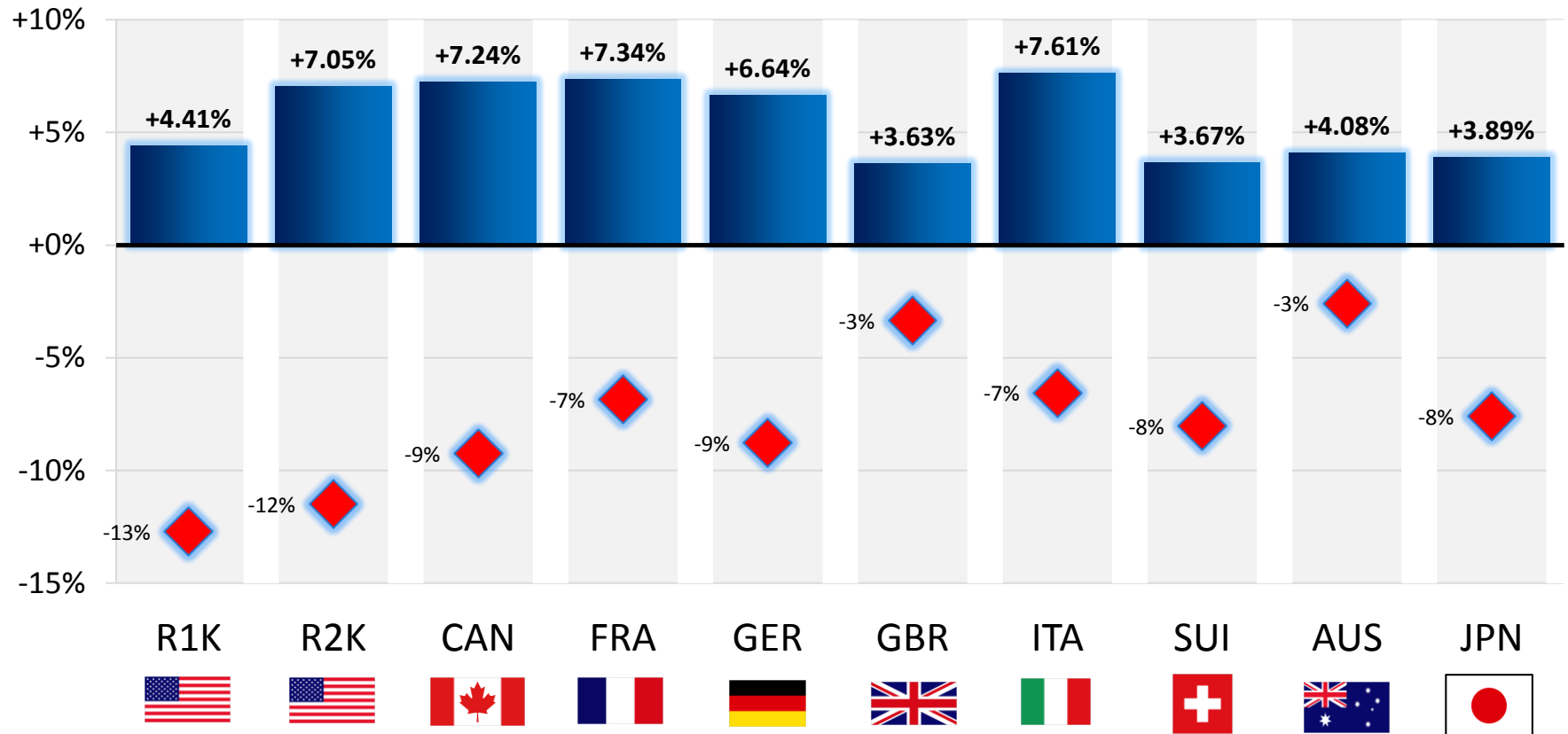
	Annualized Alpha	Market M-RF	Size SMB	Value VMG	Momentum HML	R ²
Long/Short Liquidity Factor	4.28%*	-0.44	-0.40	+0.58	+0.13	71.4%
Low Liquidity Long Portfolio (R-RF)	2.30%*	+0.74	+0.56	+0.44	0.00	88.3%

*t-stats = 3.25 and 2.79 (both statistically significant at 5% level.)

Source: Ibbotson & Kim, 2014 Update, "Liquidity as an Investment Style" [Ibbotson, Chen, Kim & Hu, *FAJ* 2013.]

Liquidity Premia - Global (USD)

Jan 2000 – Sept 2013



■ Liquidity Premium (T1-T3)

◆ Change in Risk (T1-T3)

Source: Zebra Capital Research.

Two Reasons for Investing in Liquidity

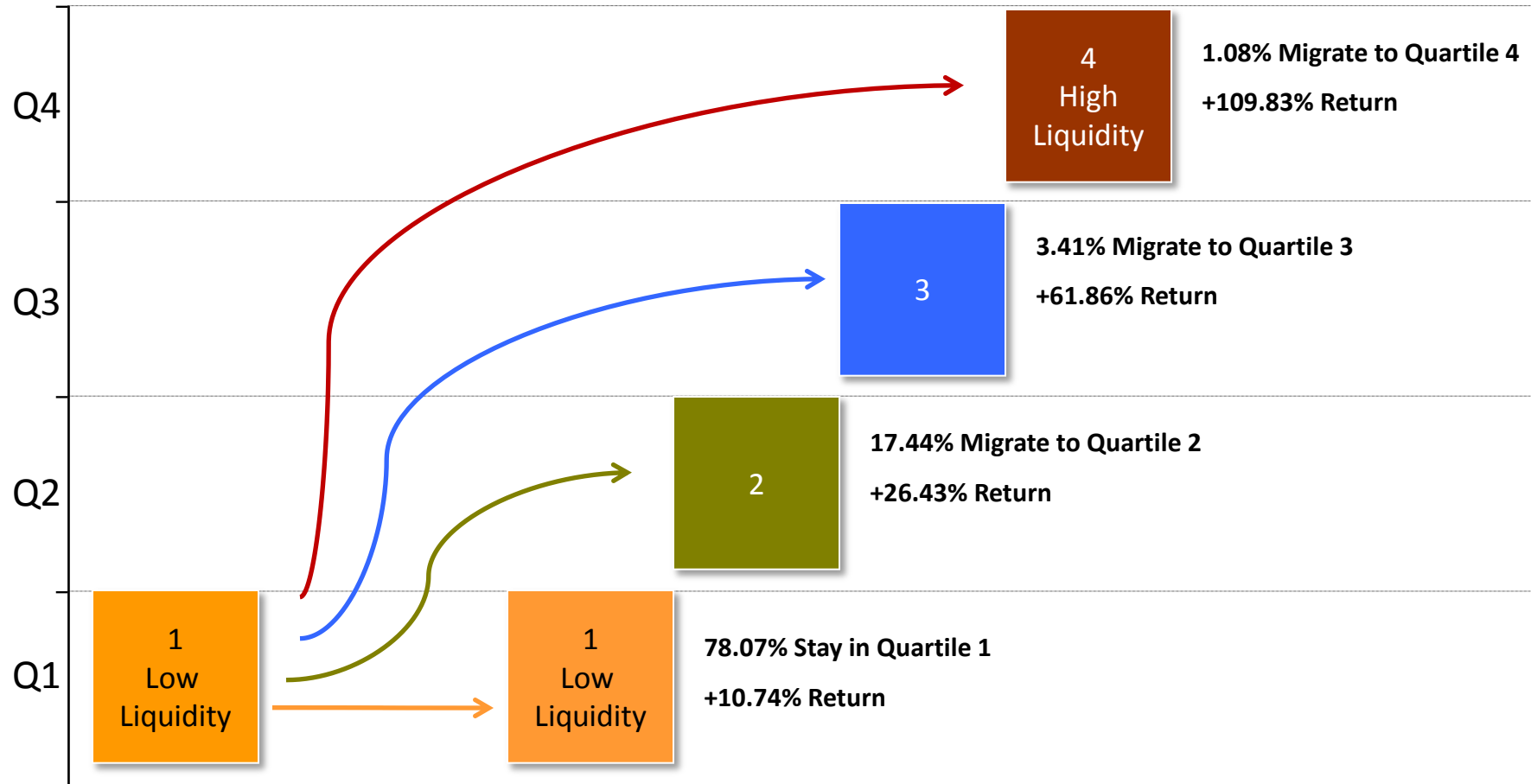
Less Liquid stocks trade at a discount to more liquid stocks

- Buying Less Liquid stocks means that the same cash flows can be bought cheaper

Liquidity is mean reverting

- Stocks move in and out of favor; as liquidity rises (falls), valuations rise (fall)

What Happens to Low Liquidity Stocks 1 Year Forward?



Source: Ibbotson & Kim, 2014 Update, "Liquidity as an Investment Style" [Ibbotson, Chen, Kim & Hu, *FAJ* 2013.]

Is Turnover a “Pure” Liquidity Measure?

- In theory and practice, *less* liquid stocks outperform.

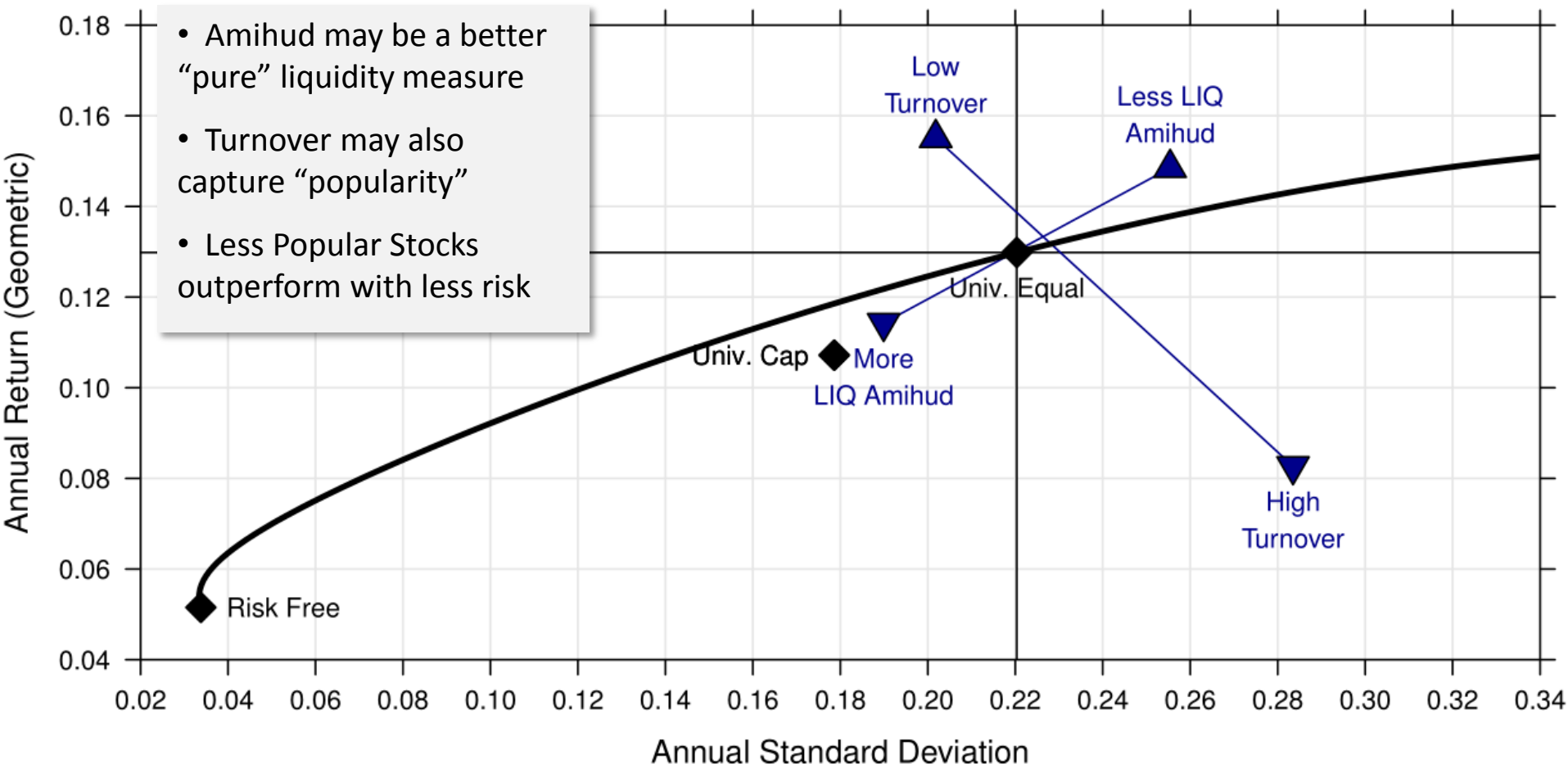
Amihud [2002]	Turnover
$1/D_{iy} \sum_{t=1}^{D_{iy}} R_{iyd} / VOLD_{iyd}$	$\frac{\text{shares traded}}{\text{shares outstanding}}$

Quartiles 1972-2013		Geometric Mean	Standard Deviation
Amihud	Less Liq	14.74%	24.60%
	More Liq	10.77	19.35
Turnover	Lower	14.87	19.81
	Higher	7.64	27.90

- But...measured by turnover, less Liquid stocks have *lower* risk

Sources: Ibbotson & Kim, “Risk & Return Within the Stock Market: What Works Best?,” Working Paper, January 2014; Yakov Amihud, “Illiquidity and Stock Returns: Cross-section and Time-series Effects,” *Journal of Financial Markets*. 5 (2002), p.31-56.

Liquidity and Popularity



Source: Ibbotson & Kim, “Risk & Return Within the Stock Market: What Works Best?,” Working Paper, January 2014.

Conclusions

Liquidity meets the Sharpe Criteria for an Investment Style

- Strong economic justification (“before the fact”)
- Higher long-run returns
- Returns differ from size, value, and momentum
- Portfolios are relatively stable over time (“low cost”)

Similar to risk, Liquidity should be managed

- Investors should relate portfolio liquidity to time horizons
- Changing stock liquidity creates return opportunities

The Liquidity Style Improves Your Portfolio

- Higher Return
- Lower Beta & Standard Deviation
- Low Correlation of excess returns

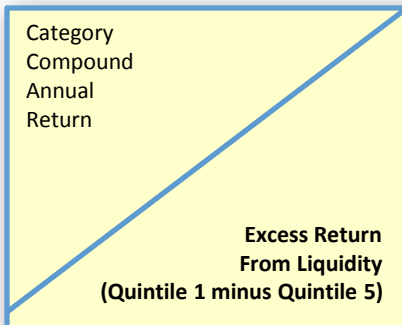
Liquidity as an Investment Style

Appendix

Liquidity of Mutual Fund Holdings

Feb 1995 – Dec 2009

U.S. Equity Fund Styles Annual Return Quintiles



Morningstar Style Box

			Value / Growth		
			Value	Blend	Growth
			1	2	3
Size	Large	1	7.35% +2.33%	6.86% +1.65%	6.68% +1.75%
		2	9.73% +3.25%	9.61% +3.19%	8.38% +3.18%
	Mid	3	9.91% +2.77%	9.29% +3.32%	7.77% +3.00%
		1	7.35% +2.33%	6.86% +1.65%	6.68% +1.75%
	Small	2	9.73% +3.25%	9.61% +3.19%	8.38% +3.18%
		3	9.91% +2.77%	9.29% +3.32%	7.77% +3.00%

Mutual Funds with relatively less liquid holdings outperform.

Source: Idzorek, Xiong and Ibbotson, 2012, "The Liquidity Style of Mutual Funds," *Financial Analysts Journal* 41(3):401-439.



Beta vs. Liquidity

1972-2013

			Liquidity				Liquidity Premium
			Low		High		Q1–Q4
			1	2	3	4	
Beta	Low	1	15.3%	14.4%	11.9%	3.4%	11.9%
		2	16.3%	15.0%	13.8%	10.5%	5.8%
		3	13.7%	14.7%	13.3%	9.9%	3.8%
	High	4	11.4%	12.0%	10.5%	6.4%	5.0%
Beta Premium		Q1–Q4	4.0%	2.4%	1.4%	-3.0%	

Liquidity explains outperformance more than low beta does.

Source: Zebra Capital Management



Volatility vs. Liquidity

1972-2013

			Liquidity				Liquidity Premium
			Low		High		Q1–Q4
			1	2	3	4	
Vol	Low	1	14.1%	14.0%	12.7%	10.9%	3.2%
		2	15.6%	14.4%	13.9%	12.1%	3.5%
		3	16.1%	15.4%	13.5%	10.4%	5.8%
	High	4	14.9%	14.1%	8.7%	2.6%	12.3%
Volatility Premium		Q1–Q4	-0.8%	-0.1%	4.00%	8.3%	

Liquidity explains outperformance more than low volatility does.

Source: Zebra Capital Management