



Taiwan Index Futures Arbitrage Trading Strategy



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Three Major Taiwan Indexes - Top Ten Constituents

- The MSCI Index holds a higher proportion of TSMC, and its performance is of a higher volatility when the stock market is bullish.
- The MSCI Index covers a wider range of Taiwan stocks, and its tracking error is smaller than that of the Taiwan Stock Exchange Index.

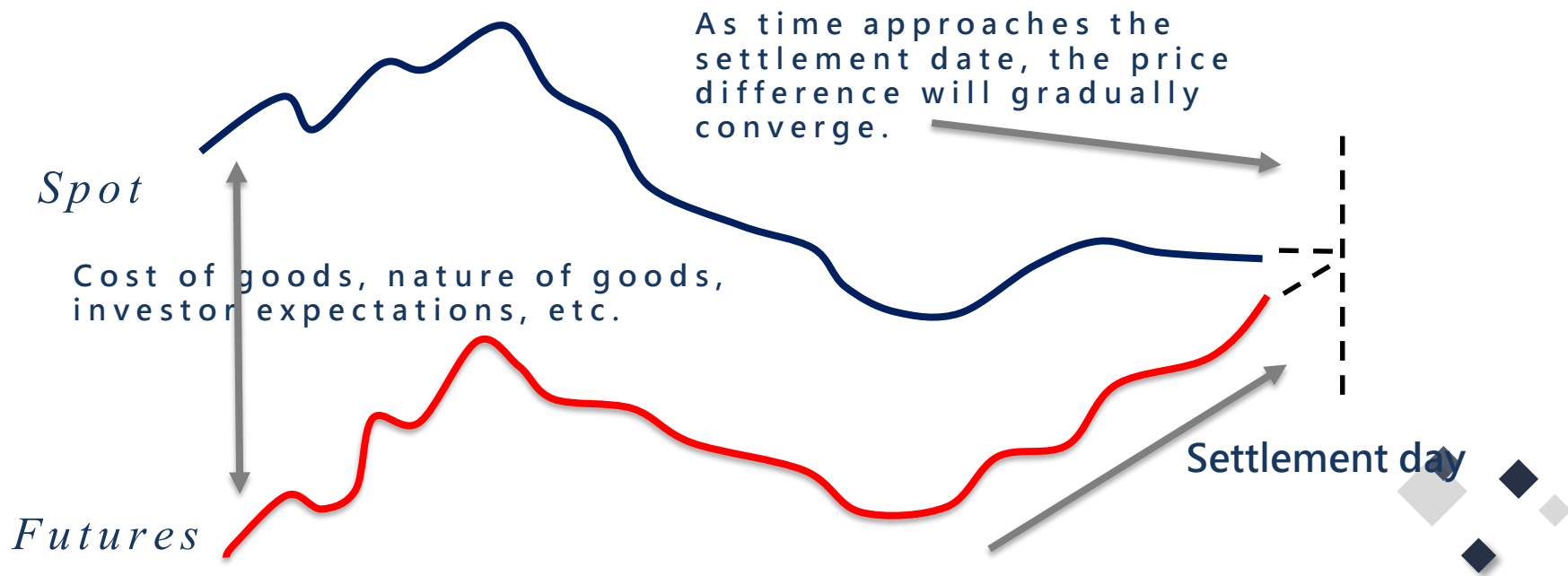
	Taiwan Stock Exchange Index		FTSE Taiwan RIC Capped Index		MSCI Index	
1	TSMC	27.45%	TSMC	19.66%	TSMC	42.55%
2	MediaTek	2.70%	HON HAI	5.03%	HON HAI	4.18%
3	HON HAI	2.68%	MediaTek	4.43%	MediaTek	3.93%
4	Chunghwa	1.80%	DELTA	2.84%	DELTA	1.85%
5	Fubon	1.57%	QUANTA	2.58%	QUANTA	1.70%
6	DELTA	1.51%	UNITED MICRO	2.15%	UNITED MICRO	1.67%
7	Formosa	1.51%	Fubon	1.90%	Fubon	1.53%
8	QUANTA	1.46%	CTBC	1.81%	Mega Financial	1.44%
9	CATHAY	1.29%	Chunghwa	1.79%	Chunghwa	1.40%
10	UNITED MICRO	1.16%	Mega Financial	1.72%	CATHAY	1.37%
	Top 10	43.13%		43.91%		61.62%



Futures and Spot Price Arbitrage

【 Arbitrage - Example 】

- The two products are essentially the same (or very similar), but their prices differ due to various reasons.
- The purpose of arbitrage : **"To buy low and sell high"** at the same time, to make the net position (delta) is very close to zero, and the price difference is expected to converge on the settlement day.

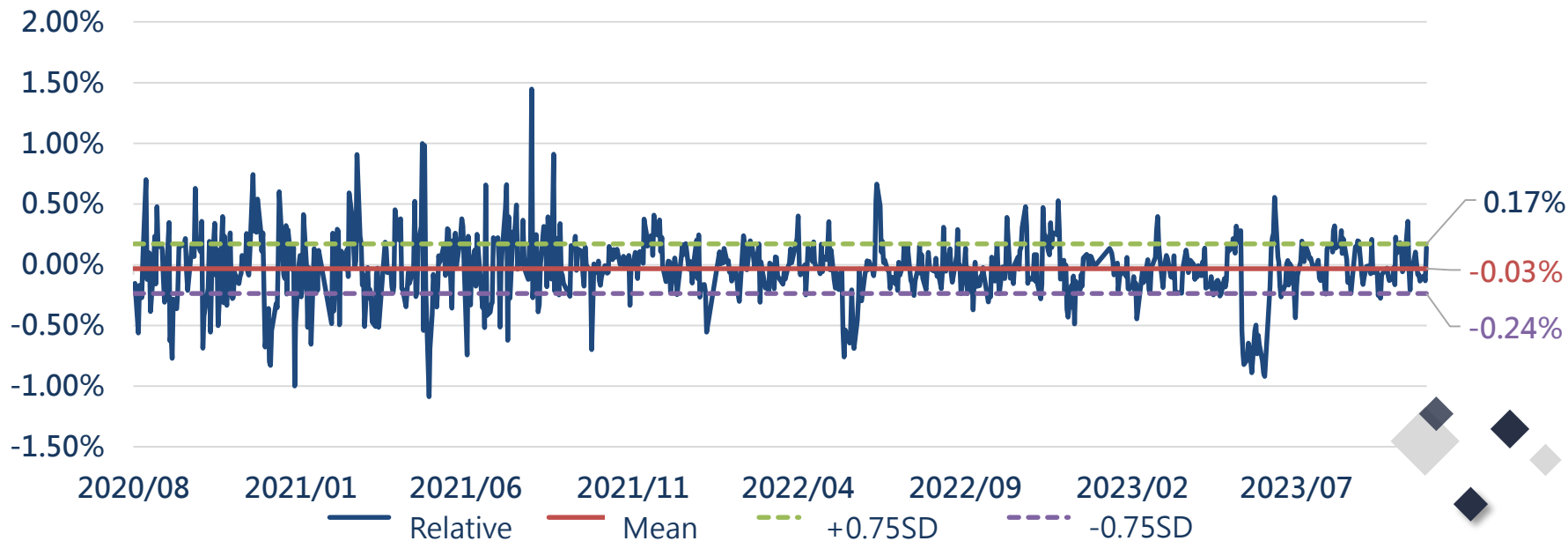




Arbitrage Strategy : Relative Strength

【Take Advantage of “Mean Reversion”】

- When the relative price difference is too large, operate in a "buy low, sell high".
- The index above 0.75 standard deviation indicates that the performance of the Taiwan Index futures is strong, then short the Taiwan Index futures and long the MSCI futures.
- Relative spread: $((\text{Taiwan Index Futures} - \text{Spot}) / \text{Spot}) - ((\text{MSCI} - \text{Spot}) / \text{Spot})$





Arbitrage Strategies: Performance

【Relative Strengthens】

Strat egy_1	Entry Date	Short TXF	Long MSCI	Exit Date	Cover TXF	Close MSCI	TXF Points	MSCI Points	Holding Days	Earn
1	2020/9/1	12694	498.6	2020/9/2	12691	498.2	3	-0.4	1	-5,000
2	2020/9/9	12574	494.1	2020/9/10	12711	496.8	-137	2.7	1	-33,100
3	2020/9/11	12656	498.5	2020/9/17	12783	507.4	-127	8.9	6	26,700
4	2020/9/22	12500	496.0	2020/9/23	12526	497.0	-26	1	1	-4,000
5	2020/10/6	12679	501.0	2020/10/8	12893	512.2	-214	11.2	2	12,600
6	2020/10/16	12744	506.0	2020/10/23	12820	511.1	-76	5.1	7	12,900
7	2020/10/29	12600	495.9	2020/10/30	12395	491.2	205	-4.7	1	37,100
8	2020/11/3	12696	503.4	2020/11/4	12848	513.3	-152	9.9	1	25,700
9	2020/11/10	13090	519.7	2020/11/11	13284	526.3	-194	6.6	1	-20,800
10	2020/11/12	13234	525.1	2020/11/13	13293	527.8	-59	2.7	1	-1,900
11	2020/11/17	13631	546.0	2020/11/18	13708	555.6	-77	9.6	1	53,000
12	2020/12/2	13972	557.1	2020/12/3	13982	557.8	-10	0.7	1	-300



Arbitrage Strategies: Performance

【 Back Testing Result 】

- During the three-year period, the number of transactions reached 139, which is approximately 3.9 trading opportunities per month.
- The average holding period is short, which is a short-term trading strategy, and the overall average winning rate is as high as 46.76%.

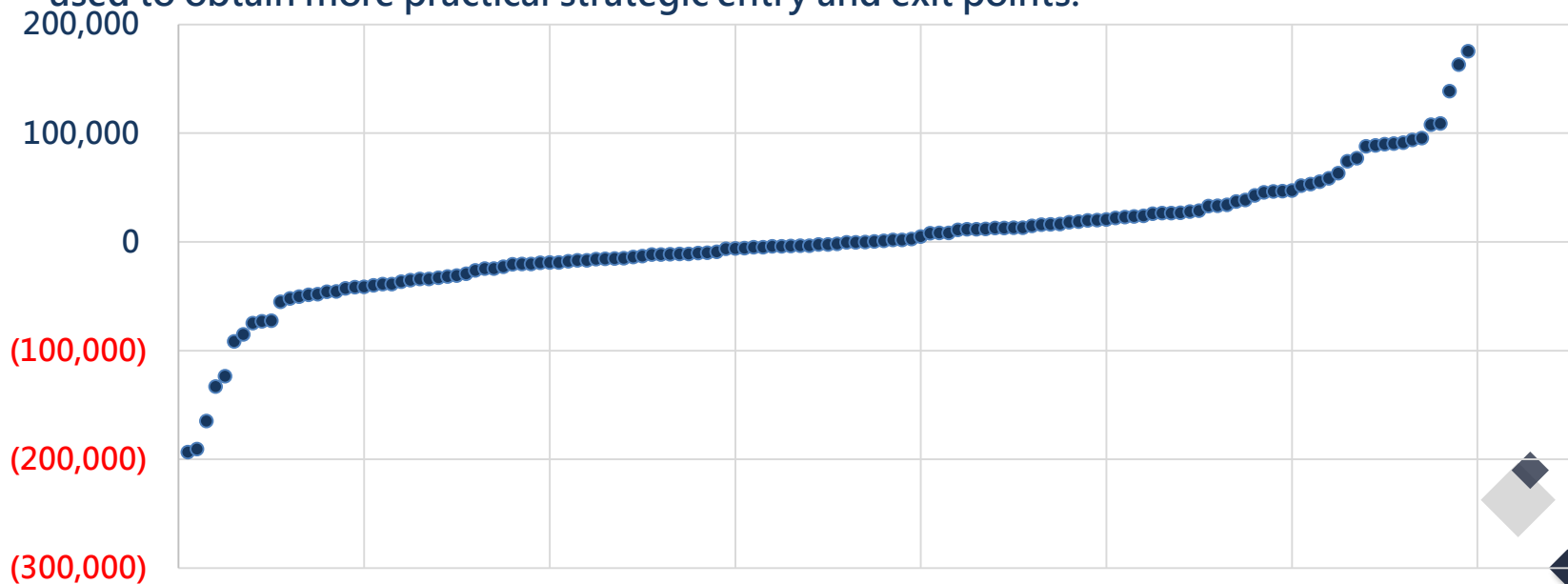
	Short TXF Long MSCI	Short MSCI Long TXF	SUM
Transactions	72	67	139
Win Rates	40.28%	53.73%	46.76%
Avg. Holding Days	4.28	4.76	4.51
Avg. Profit	48,569	36,139	42,577
Avg. Loss	-32,907	-37,058	-34,908
Profit-Loss Ratio	1.00	1.13	1.06
Max. Profit	175,300	93,700	175,300
Max. Loss	-193,500	-190,700	-193,500
Avg. Profit	-90	2,272	1,048
Total Profit	-6,500	152,200	145,700



Arbitrage Strategies: Performance

【 Back Testing Result 】

- From the distribution chart of the single profit, we can see that there is a "fat tail" phenomenon in profit, and adding a stop loss setting may avoid larger losses.
- Since entry and exit are easily affected by gaps in the opening price, intraday data can be used to obtain more practical strategic entry and exit points.





Conclusions

1. Expected interest rate cuts in 2024.

The U.S. dollar index is expected to drop due to interest rate cuts, which may cause TSMC's stock price to rise, which may further increase the profit margin.

2. Industry Outlook: The AI industry drives company performance.

Taiwan's semiconductor industry supply chain is complete. Stimulated by the demand for AI, most electronics companies have experienced significant growth in performance.

3. Arbitrage space: commodities have their own characteristics.

The three index futures are affected by differences in index constituents, trading hours and contract system design, and each has its own characteristics. It is recommended to observe from different prospects to explore more trading opportunities.



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Thank you for watching and listening

