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Profitability of Momentum Strategies for IPO Stocksin Hong Kong

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Abstract: Most momentum researches are based on the seminal work advocated by Jegadeesh and Titman (2001), i.e., sorting and trading all the stocks in a market. In reality, investors rarely trade assets of the whole market. In the literature, no study has tested the effectiveness of momentum strategies on IPOs in the literature.This paper applies momentum strategies to the IPO stocks of Hong Kong. It is found that taking long positions of IPOs in Hong Kong by employing momentum strategies can generate a significant monthly return.

Keywords: Momentum Strategies; Time Series Momentum; IPOs.

1. Introduction

There is a plethora of evidence in the literature supporting the effectiveness of momentum strategies. Jegadeesh and Titman (1993) examine various momentum strategies for the US stock market and find that buying stocks with high returns over the previous 3 to 12 months and selling stocks with poor returns over the same period generate profits of about 1% per month for the following 3 to 12 months. It is argued that the market underreacts to firm-specific information. In a subsequent study, Jegadeesh and Titman (2001) reinforce their 1993 study by showing that momentum strategies continue to be profitable, and that past winners outperform past losers by about the same magnitude as in the earlier period.The concept of time series momentum, meaning an asset's own historical returns can predict itsfuture returns,is first suggested by Moskowitz et al. (2012). In traditional price momentum strategies, researchers sort winners and losers by their relative performances, and consequently long the relative winners and short the relative losers. Moskowitz et al. (2012) calculate assets'returns in the past 1 to 48 months within a particular segment. Andyet instead of longing/shortingan asset according to its relative performance, they long all the securities that yield positive returns and short the ones that generate negative returns. They find that this time series momentum can be observedin stock market indices, foreign exchanges, bonds as well as commodities.In the literature, most momentum researches are based on the seminal work advocated by Jegadeesh and Titman (2001), that is, sorting and trading all the stocks in a market. In reality, ordinary investors rarely trade assets of the whole market but only a particular segment of the market.In this paper, we apply momentum strategies to the IPO stocks within a given time period. This is an entirely new attempt in terms of the subsample used. To the best of our knowledge, no study has tested the effectiveness of momentum strategies on IPOs in the literature. Most of the existing literature

on IPO focus on calculating the magnitude of IPO underpricing. McGuinness (1992) studies 80 IPOs listed in Hong Kong from 1980 to 1990 and finds that the underpricing level is about 18%. Loughran et al. (1994) discover that, for the 25 countries in their study, IPO underpricing exists, and the extent of underpricing is higher for developing economies. Another stream of the IPO literature seeks to explain why IPOs are usually underpriced. Saunders (1990) argues that as an underwriter undergoes firm commitment underwriting, the underwriter will have a strong incentive to underprice IPOs so as to reduce the underwriting risk. Beatty and Ritter (1986) advocate that IPOs need to be underpriced in order to induce uninformed investors to participateand purchase them. If IPO underpricing is a commonly agreed fact, an important research question is whether profitable momentum strategies existif we pool all underpriced IPOs together, and then sort and trade according to their recent price returns. As there are no existing studies on time series momentum strategies on IPOs, in this groundbreaking article, we are going to investigate whethertime series momentum exists for the new shares market.

In addition, we will further examine if time-dependent returns for IPOs exist. We take long positions for the IPOs that were listed relatively recently and short those listed in a more distant past. The goal is to check if abnormal returns can be obtained by using listing time as the only sorting criterion.

2. Data and Methodology

In our study, end-of-month data of closing prices are obtained from Thomson Reuters Eikon (DataStream). We targetedall 656 firms that werelistedin Hong Kong between 2006 and2015 and studied theirprice dataobtained over the period from January 2006 to June 2016, excluding those delisted and also those with trading suspended. Table 1 provides the descriptive statistics of the average monthly price returns for the IPOs in each year.

Table 1: Descriptive Statistics, Average Monthly Returns of IPOs

Year	*Number of IPOs Listed*	*Average Monthly Returns*	*IPOs With Average Monthly Returns*	
			Positive	*Negative*
2006	48	1.005%	46	2
2007	68	0.560%	50	18
2008	26	1.779%	22	4
2009	52	0.116%	27	25
2010	81	0.246%	44	37
2011	72	0.670%	43	29
2012	50	1.135%	33	17
2013	77	0.890%	43	34
2014	92	1.323%	61	31
2015	90	-0.100%	35	55
Total	656		404	252
		Average of All IPOs		0.678%
		Max		33.395%
		Min		-8.613%

We observe that 404 out of the 656 IPOs recordpositive monthly returns on average, while about 38% of these new shares, that is, 252 firms experiencenegative average monthly returns. Overall, the average monthly return of all IPOs is 0.678%. These imply that investors taking long positions of IPOs enjoyed profits in general, echoing IPO underpricing arguments. Withinthe whole sample, the maximum average monthly return is 33.395%, while the minimum is -8.613%.

We investigate the time series momentum for IPOs as there has beenno research on this segment in existing literature. We will examineif there is time series momentum for the IPO market. Particularly, at the end of each month, we restrict the data such that only those IPOs listed within the past 12 months are retained in the study. At theend of each month, we will calculate the recent past returns of all IPOs. The lookback periods of past returns will be 1 month, 2 months, 3 months and 6 months.

In order tostudy the time series momentum, at the end of each month, we will long all IPOs with positive returns as well as short all IPOs with negative returns simultaneously in each lookback period. To mitigate concerns aboutdata snooping, we will review the performance of the long-short time series momentum portfolios with holding periods of 1 month, 2 months, 3 months and 6 months. The long-short portfolios are equally weighted and will notrebalanced over the holding period. We summarize these strategies in Table 2.

Table 2: Definition of Time Series Momentum Strategies for IPOs

Lookback Period	*Holding Period*	*Long/Short*
1 month	1 month	Long All Stocks with Positive Returns
	2 months	Short All Stocks with Negative Returns
	3 months	
	6 months	
2 months	1 month	Long All Stocks with Positive Returns
	2 months	Short All Stocks with Negative Returns
	3 months	
	6 months	
3 months	1 month	Long All Stocks with Positive Returns
	2 months	Short All Stocks with Negative Returns
	3 months	
	6 months	
6 months	1 month	Long All Stocks with Positive Returns
	2 months	Short All Stocks with Negative Returns
	3 months	
	6 months	

In this paper, the performance of the long components, short components, together with the long-short momentum portfolios will be reported. We will

evaluate the profitability of both the price momentum and time series momentum strategies. Following Novy-Marx (2012), we will check if there existsa term-structure of time series momentum.

In addition, we will investigate if time-dependent returns for IPOs exist. As observed from the IPOs data, for those firms listed from 2006 to 2008, 74% to 96% of the shares enjoy positive average monthly returns,while for those IPOs listed from2009 onwards, the proportion of stocks with positive monthly returns on average isabout 52% to 66%.

Consequently, we will examine whether there exist profitable strategies by, at the end of any month, taking long positions of all past n-month listed IPOs and simultaneously taking short positions of all past n + 1-month to 2n-month listed IPOs. To mitigate concerns aboutdata snooping, we will choose n to be equal to 12, 18 and 24. We summarize these strategies in Table 3.

Table 3: Definition of Time-Dependent Strategies for IPOs

	Long All the IPOs Listed in Past	*Short All the IPOs Listed in Past*
Strategy 1	1 to 12 months	13 to 24 months
Strategy 2	1 to 18 months	19 to 36 months
Strategy 3	1 to 24 months	25 to 48 months

3. Performance of Time Series Momentum Strategies

In this paper, we examine the performance of time series momentum strategies for 2006 to 2015 IPOs from January 2006 to June 2016. Tables 4a, b, c and d summarize the performance of these strategies with past returns' lookback periodsbeing1 month, 2 months, 3 months and 6 months, respectively.

The results show that, with holding periods between1 to 3 months and alookback period of 1 month, the monthly mean returns of long-short strategies range from 0.731% to 1.029%; the results for the 2-month lookback period range between 0.440% and 0.852%; for a lookback period of 3 months, the profits range from 0.619% to 0.940%. Our results reveal the termstructure of time series momentum for IPOs. We observe that during the entire sample period, combining a short-term lookback period and a short-term holding period generate profits greater than the average monthly returns of all IPOs of 0.678% in general.

However, the performance of the long-short strategies is rather poor when combined with a relatively long lookback period and a holding period of 6 months.The returns for long-short profits with a lookback period of 6 months are negative regardless of the holding periods, rangingfrom -0.530% to -7.040% monthly on average. Meanwhile, mean returns of a 6-month holding period range from 0.113% to -7.040%. The main reason is that the short components generate highly negative returns. Forthe results corresponding to the 6-month holding period, despite the robust monthly returns of long portfolios,at 9.743%

Table 4a: Performance of Time Series Momentum Strategies for IPOs Lookback Period of 1 Month

	Long Strategy	*Short Strategy*	*Long and Short Strategy*
Holding Period of 1 Month			
Mean Return (%)	1.710%	-0.234%	0.731%
Median Return (%)	2.339%	-0.464%	0.763%
Standard Dev. (%)	10.732%	9.710%	4.215%
Information Ratio	0.159	-0.024	0.173
Holding Period of 2 Months			
Mean Return (%)	3.224%	-1.622%	0.788%
Median Return (%)	3.215%	-1.648%	0.941%
Standard Dev. (%)	15.615%	15.504%	5.369%
Information Ratio	0.206	-0.105	0.147
Holding Period of 3 Months			
Mean Return (%)	5.302%	-3.201%	1.029%
Median Return (%)	3.706%	-3.113%	1.237%
Standard Dev. (%)	20.220%	20.469%	6.955%
Information Ratio	0.262	-0.156	0.148
Holding Period of 6 Months			
Mean Return (%)	9.931%	-9.622%	0.113%
Median Return (%)	5.759%	-5.251%	1.351%
Standard Dev. (%)	32.571%	38.423%	12.850%
Information Ratio	0.305	-0.250	0.009

Table 4b: Performance of Time Series Momentum Strategies for IPOs Lookback Period of 2 Months

	Long Strategy	*Short Strategy*	*Long and Short Strategy*
Holding Period of 1 Month			
Mean Return (%)	1.899%	-1.004%	0.440%
Median Return (%)	1.594%	-0.614%	0.811%
Standard Dev. (%)	9.778%	13.304%	6.525%
Information Ratio	0.194	-0.075	0.067
Holding Period of 2 Months			
Mean Return (%)	3.847%	-2.111%	0.852%
Median Return (%)	3.249%	-0.986%	1.024%
Standard Dev. (%)	15.509%	18.857%	8.199%
Information Ratio	0.248	-0.112	0.104
Holding Period of 3 Months			
Mean Return (%)	5.285%	-3.648%	0.797%
Median Return (%)	5.990%	-0.714%	0.957%
Standard Dev. (%)	19.985%	24.037%	9.343%
Information Ratio	0.264	-0.152	0.085
Holding Period of 6 Months			
Mean Return (%)	9.825%	-12.505%	-1.381%
Median Return (%)	4.962%	-2.065%	1.283%
Standard Dev. (%)	32.368%	46.463%	17.495%
Information Ratio	0.304	-0.269	-0.079

Table 4c: Performance of Time Series Momentum Strategies for IPOs Lookback Period of 3 Months

	Long Strategy	*Short Strategy*	*Long and Short Strategy*
Holding Period of 1 Month			
Mean Return (%)	2.004%	-0.733%	0.619%
Median Return (%)	1.789%	-0.286%	0.859%
Standard Dev. (%)	9.629%	12.352%	5.706%
Information Ratio	0.208	-0.059	0.109
Holding Period of 2 Months			
Mean Return (%)	3.906%	-1.962%	0.940%
Median Return (%)	3.880%	-2.238%	1.526%
Standard Dev. (%)	14.400%	20.883%	8.300%
Information Ratio	0.271	-0.094	0.113
Holding Period of 3 Months			
Mean Return (%)	5.368%	-3.544%	0.867%
Median Return (%)	3.899%	-1.172%	1.589%
Standard Dev. (%)	19.626%	25.164%	10.158%
Information Ratio	0.274	-0.141	0.085
Holding Period of 6 Months			
Mean Return (%)	9.743%	-14.504%	-2.463%
Median Return (%)	6.328%	-2.478%	1.436%
Standard Dev. (%)	31.727%	60.029%	25.724%
Information Ratio	0.307	-0.242	-0.096

Table 4d: Performance of Time Series Momentum Strategies for IPOs Lookback Period of 6 Months

	Long Strategy	*Short Strategy*	*Long and Short Strategy*
Holding Period of 1 Month			
Mean Return (%)	1.384%	-2.397%	-0.530%
Median Return (%)	0.995%	0.174%	0.729%
Standard Dev. (%)	9.092%	19.307%	9.116%
Information Ratio	0.152	-0.124	-0.058
Holding Period of 2 Months			
Mean Return (%)	3.343%	-5.609%	-1.189%
Median Return (%)	1.225%	-1.503%	0.958%
Standard Dev. (%)	15.793%	34.605%	15.508%
Information Ratio	0.212	-0.162	-0.077
Holding Period of 3 Months			
Mean Return (%)	3.977%	-8.385%	-2.272%
Median Return (%)	3.693%	-1.664%	0.487%
Standard Dev. (%)	19.505%	41.214%	18.018%
Information Ratio	0.204	-0.203	-0.126
Holding Period of 6 Months			
Mean Return (%)	9.815%	-23.550%	-7.040%
Median Return (%)	3.855%	-1.712%	1.787%
Standard Dev. (%)	35.753%	107.563%	50.715%
Information Ratio	0.275	-0.219	-0.139

to 9.931% on average, the short portfolios generate monthly returns of -9.622% to -23.550%, dragging down the overall performance of the long-short portfolios.

A closer inspection of the performance of the long and short component of the portfolio provides further insights into the mechanics of the time series momentum strategies. We find that for all lookback periods and all holding periods, the long component, that is, longing all the IPOs with positive historical returns will generate positive returns, while shorting all the otherswith negative past returns will generate negative returns;the results are quite surprising.

As observed from the IPO data, for all IPOs listed in the sample period, 404 out of 656 firms, that is, about 61.6% of firms experienced positive average monthly returns during the sample period. Therefore, taking a short position for a relatively long period of time in Hong Kong IPOs mightnot be a fruitful strategy.

For the long component, witha holding period of 1-month, monthly returns of long strategy range from 1.384% to 2.004%. Monthly returns of a 2-month holding period range between 3.224% and 3.906%. For a 3-month holding period, the results range from 3.977% to 5.368%. The average monthly return for a 6-month holding period range between 9.743% and 9.931%. Regardless of the choice of lookback period, the time series momentum strategies outperform the average monthly return of IPOs of 0.678%.

In conclusion, during the whole sample period from January 2006 to June 2016, investing in IPOs by taking long positions in all firms with positive recent past returns can generate an overall return of 1.384% to 9.931% per month on average; the returns are higher when adopting a longer holding period.

To investigate whether momentum profits change over time, we examine the stability of the long-short profits by conducting a subsample analysis. The subsample analysis of lookback periods of 1 month, 2 months, 3 months and 6 months are illustrated in Tables 5a, b, c and d, respectively.

The whole sample period of January 2006 to June 2016 is divided into two subsamples: from 2006 to 2010 and from 2011 to 2016. Observe that in general, for holding periods as well as lookback periods between 1 to 3 months, returns from the period 2006 to 2010 out performs the recent five-year subsample period. The long-short monthly mean returns in this first subsample range from 0.395% to 1.475%, while those in the second subsample are from 0.492% to 1.026%.

Focusing on the long strategies, with holding periods as well as look back periods of 1 to 3 months, monthly mean returns for the earlier five-year subsample range from 2.733% to 9.730%, which is significantly higher than the second subsample's returns of 0.399% to 2.097%. On the other hand, our results do exhibit a trend of diminishing time series momentum profits for the IPOs over time. This suggests that the market might have become relatively more efficient in recent years.

Table 5a: Subsample Analysis of Time Series Momentum Strategies for IPOs Lookback Period of 1 Month

	Long Strategy	*Short Strategy*	*Long and Short Strategy*
Holding Period of 1 Month			
2006 – 2010	2.733%	-1.100%	0.772%
2011 – 2016	0.699%	0.539%	0.619%
Holding Period of 2 Months			
2006 – 2010	5.304%	-3.897%	0.626%
2011 – 2016	1.150%	0.268%	0.709%
Holding Period of 3 Months			
2006 – 2010	8.842%	-6.798%	0.884%
2011 – 2016	2.097%	-0.045%	1.026%
Holding Period of 6 Months			
2006 – 2010	17.908%	-20.603%	-1.737%
2011 – 2016	3.233%	0.273%	1.753%

Table 5b: Subsample Analysis of Time Series Momentum Strategies for IPOsLookback Period of 2 Months

	Long Strategy	*Short Strategy*	*Long and Short Strategy*
Holding Period of 1 Month			
2006 – 2010	3.428%	-2.734%	0.395%
2011 – 2016	0.399%	0.658%	0.529%
Holding Period of 2 Months			
2006 – 2010	6.897%	-4.671%	1.222%
2011 – 2016	1.075%	0.498%	0.786%
Holding Period of 3 Months			
2006 – 2010	9.730%	-7.224%	1.435%
2011 – 2016	1.395%	-0.066%	0.665%
Holding Period of 6 Months			
2006 – 2010	19.776%	-23.811%	-2.376%
2011 – 2016	2.612%	-1.308%	0.652%

Table 5c: Subsample Analysis of Time Series Momentum Strategies for IPOs Lookback Period of 3 Months

	Long Strategy	*Short Strategy*	*Long and Short Strategy*
Holding Period of 1 Month			
2006 – 2010	3.141%	-2.224%	0.497%
2011 – 2016	0.536%	0.630%	0.614%
Holding Period of 2 Months			
2006 – 2010	6.649%	-4.627%	1.088%
2011 – 2016	1.062%	0.580%	0.869%
Holding Period of 3 Months			
2006 – 2010	9.658%	-7.003%	1.475%
2011 – 2016	1.112%	-0.268%	0.492%
Holding Period of 6 Months			
2006 – 2010	20.002%	-26.792%	-3.740%
2011 – 2016	2.755%	-1.340%	0.774%

Table 5d: Subsample Analysis of Time Series Momentum Strategies for IPOs Lookback Period of 6 Months

	Long Strategy	*Short Strategy*	*Long and Short Strategy*
Holding Period of 1 Month			
2006 – 2010	2.368%	-5.697%	-1.460%
2011 – 2016	0.246%	0.431%	0.364%
Holding Period of 2 Months			
2006 – 2010	6.233%	-12.811%	-3.152%
2011 – 2016	1.216%	0.547%	0.882%
Holding Period of 3 Months			
2006 – 2010	9.003%	-17.086%	-4.191%
2011 – 2016	1.244%	-0.296%	0.493%
Holding Period of 6 Months			
2006 – 2010	16.443%	-57.406%	-21.225%
2011 – 2016	4.152%	1.153%	2.667%

4. Time-Dependent Returns for IPOs

We examine thatif time-dependent returns for IPOs exist from January 2006 to June 2016. At the end of each month, we take long positionsin all IPOs listed in the past 1 to 12 months, 1 to 18 months and 1 to 24 months, and simultaneously take short positions of all IPOs listed in the past 13 to 24 months, 19 to 36 months and 25 to 48 months, respectively. Table 6 summarizes the performance of these strategies.

Table 6: Performance of Time-Dependent Strategies for IPOs

	Long Strategy	*Short Strategy*	*Long and Short Strategy*
Strategy 1: Long IPOs in Past 1 to 12 months, Short IPOs in Past 13 to 24 months			
Mean Return (%)	0.655%	1.153%	0.949%
Median Return (%)	1.485%	1.671%	1.507%
Standard Dev. (%)	8.748%	9.658%	9.088%
Information Ratio	0.075	0.119	0.104
Strategy 2: Long IPOs in Past 1 to 18 months, Short IPOs in Past 19 to 36 months			
Mean Return (%)	0.735%	0.549%	0.537%
Median Return (%)	1.631%	0.866%	1.266%
Standard Dev. (%)	8.784%	9.600%	9.260%
Information Ratio	0.084	0.057	0.058
Strategy 3: Long IPOs in Past 1 to 24 months, Short IPOs in Past 25 to 48 months			
Mean Return (%)	0.842%	0.487%	0.607%
Median Return (%)	1.489%	0.781%	0.915%
Standard Dev. (%)	8.878%	9.480%	9.325%
Information Ratio	0.095	0.051	0.065

Interestingly, our results show that time-dependent returns exist for all three long-short strategies in the sample period. The highest profit can be

achieved by longing the IPOs listed in past 1 to 12 months and simultaneously shorting those listed in the past 13 to 24 months, which results in a monthly return of 0.949% on average, outperforming the average monthly IPO return of 0.678%.

Focusing on the long component, longing IPOs listed in the past 1 to 24 months yields the highest average monthly return of 0.842%. For the short component, we find that shorting IPOs listed in the past 1 to 12 months performs the best by having a mean monthly returnof 1.153%.

5. Conclusion

This paper contributes to the literature by evaluating the performance of time series momentum strategies on Hong Kong IPOs. It is found that investing in IPOs using time series momentum-based long-short strategies yields an average profit of about 0.440% to 1.029% per month when the holding period and lookback period are set between 1 to 3 months. Further investigations find that the performance of the long-short strategies is dragged down by the short components because the majority of the sample stocks do experience a positive monthly return on average.For the long component, the average monthly returns range between 1.384% and9.931%. Regardless of the lookback period chosen, we find that the time series momentum strategies beat the average monthly return of all IPOs, that is,0.678%. The longer the holding period, the better the long portfolios' returns.Our findings generally support the notion that Hong Kong's IPO market is not efficient. We further examine whether IPO momentum profits decay over time. Our results show that the performance of momentum strategies from 2006 to 2010 is generally better compared to that in the recent five-year subsample period. This shows that the Hong Kong IPO market has become more efficient in recent years. Our results also demonstrate that time-dependent returns for IPOs exist, and that the highest profit can be achieved by longing IPOs listed in the past 1 to 12 months and shorting those listed inthe past 13 to 24 months at the same time. Doing so results in mean monthly return of 0.949%, outperforming the benchmark of 0.678%– the mean monthly return of IPOs. This provides evidence that positive returns can be obtained by using listing time as the onlysorting criterion.

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