

## **Industry Momentum at the End of the 20<sup>th</sup> Century**

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### **Abstract**

Previous studies are conflicting as to whether industry momentum can explain stock momentum. We revisit this issue using a large dataset covering the US and 37 international countries. The results indicate that industry momentum earns significant profits worldwide and the profits are larger in January than in non-January months. Furthermore, analyzing portfolios generated from two-way sort provides evidence that industry and individual stock momentum are independent of each other.

*Key words:* stock momentum; industry momentum; profitability; independence

*JEL classification:* G11; G12; G15

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### **1. Introduction**

From both academia and industry, there has been tremendous interest in stock momentum, which generates 1% return every month from buying past winner stocks and selling past loser stocks. Perplexed by the economic profitability from this simple strategy and its implications for market efficiency, researchers have devoted significant resources into investigating the robustness and possible causes of stock momentum.

In contrast, there is little research on industry momentum with notable exceptions of Moskowitz and Grinblatt (1999), Grundy and Martin (2001), and Chordia and Shivakumar (2002). But there is no consensus on the profitability of industry momentum and its relation to stock momentum. Moskowitz and Grinblatt (1999) find that buying past winner industries and selling past loser industries is profitable in the US. In addition, once industry momentum is controlled for, individual stocks no longer exhibit momentum profitability. Grundy and Martin

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Received May 15, 2007, revised June 13, 2007, accepted June 20, 2007.

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(2001) show that industry momentum profitability relies heavily on the month between formation and evaluation periods, and it is too early to conclude that industry effect drives stock momentum. Chordia and Shivakumar (2002) discover that, although both stock and industry momentum profits result from the predictability of macroeconomic factors, industry momentum cannot explain away stock momentum. Finally, using Datastream industry classification and data, Swinkels (2002) establishes the profitability of industry momentum for the US and Europe and indicates little support for the effect in Japan.

This paper contributes to the literature with new evidence on the profitability of industry momentum and its relation with stock momentum. Focusing on the typical six-by-six-month momentum strategy, we find that quintile industry momentum portfolios generate 0.40% monthly returns in the US and 0.49% in 37 international countries. Strikingly, although it is documented that there is no individual stock momentum in Asia (Chui et al., 2000; Griffin et al., 2003), industry momentum strategy works well in Asia and earns a significant return of 0.41% every month. Industry momentum is stronger in developed countries than in emerging markets, where the profits are 0.54 and 0.14% per month, respectively. Except the winner industry portfolio in Europe, all winner and loser portfolios consistently outperform local markets.

We further investigate the behavior of industry momentum in January and non-January months. In various countries, industry momentum profit is consistently positive in January. One asymmetric phenomenon is that the profit in the US is lower in January than in other months; in other countries, however, momentum profit is higher in January than in non-January months. Across countries, continents, and regions, winner and loser industries outperform local markets in January.

The results also show that, on a global basis, industry and stock momentums are independent. Controlled for industry performance in the past six months, individual stocks that perform well continue to do well and stocks that do poorly persist in drifting down in the next six months. Similarly, among stocks that exhibit similar return performance within the past six months, buying stocks with high industry returns and selling stocks with low industry returns earns significant profits in the next six months. Industry and stock momentum are independent.

The rest of the paper is organized as follows. Data and methodology are in Section 2. Section 3 contains the main results on the profitability of industry momentum strategy, the performance of winner and loser industries relative to local markets, the performance of industry momentum in January, and the independence between industry and stock momentum. Section 4 concludes.

## **2. Data and Methodology**

### **2.1 Data**

Data are compiled from the Center for Research in Security Prices (CRSP) and Datastream International. Consistent with the literature, our analysis focuses on

common stocks only. Accordingly, ADRs, REITs, primes, closed-end funds, and foreign companies are not included in the sample.

**Table 1. Industry Classifications**

Panel A: US Industries in CRSP		Panel B: International Industries in Datastream	
Industry	SIC	Industry	INDC4
Mining	10-14	Aerospace & Defence	AERSP
Food	20	Automobiles & Parts	AUTMB
Apparel	22-23	Banks	BANKS
Paper	26	Beverages	BEVES
Chemical	28	Chemicals	CHMCL
Petroleum	29	Construction & Building Materials	CNSBM
Construction	32	Distributors	DISTR
Prim. Metals	33	Diversified Industrials	DIVIN
Fab. Metals	34	Electricity	ELECT
Machinery	35	Electronic & Electrical Equipment	ELTNC
Electrical Eq.	36	Engineering & Machinery	ENGEN
Transport Eq.	37	Food & Drug & Retailers	FDRET
Manufacturing	38-39	Food Producers & Processors	FOODS
Railroads	40	Forestry & Paper	FSTPA
Other Transport.	41-47	Gas Distribution	GASDS
Utilities	49	Health	HLTHC
Dept. Stores	53	Household Goods & Textiles	HHOLD
Retail	50-52, 54-59	Information Technology Hardware	INFOH
Financial	60-69	Insurance	INSUR
Other	other	Investment Companies	INVSC
		Leisure, Entertainment & Hotels	LESUR
		Life Assurance	LIFEA
		Media & Photography	MEDIA
		Mining	MNING
		Oil & Gas	OILGS
		Other Business	OTHBU
		Packaging	PCKGN
		Personal Care & Household Products	PERSH
		Pharmaceuticals	PHARM
		Real Estate	RLEST
		Retailers, General	RTAIL
		Software & Computer Services	SFTCS
		Specialty & Other Finance	SPFIN
		Steel & Other Metals	STLOM
		Support Services	SUPSV
		Telecom Services	TELCM
		Tobacco	TOBAC
		Transport	TRNSP
		Water	WATER

For common stocks in the US, CRSP is used to obtain their size, returns, and SIC codes from 1962 to 2000. To ensure that there is enough industry dispersion and that the number of industries is tractable, industry classification is formulated using the methodology of Moskowitz and Grinblatt (1999). Based on its two-digit SIC code, each stock is categorized into one of the 20 industries. Panel A of Table 1 tabulates the

definitions of the 20 industries. Although we have results for common stocks in the US from Datastream that are consistent with our analysis, we choose to report only results on CRSP data in order to make our study comparable with previous ones.

Datastream International is our source for international stocks. Stock returns and industry codes are considered during the period 1970 to 2000. In order to uniformly classify industries across different countries, the level-four classification scheme designed by the FTSE is adopted. Panel B of Table 1 displays the definitions and associated Datastream codes. Altogether, there are 39 industries across the 37 international countries.

## **2.2 Methodology**

Industry returns are calculated in the local currency. For the US, industry return is the value-weighted average across all stocks in the industry. The large number of stocks in the US guarantees that there are enough stocks in each portfolio to ensure a reasonable measure of industry returns. For international countries, industry returns are computed based on the value-weighted industry return index available in Datastream International.

The Jegadeesh and Titman (1993) methodology is followed in order to form the typical six-by-six-month momentum strategies. At the end of each month, industries within each country are ranked based on their prior six-month return performance. Top and bottom 20% industries are designated winner and loser industries, respectively. One-month lag between portfolio formation and measurement periods is used to avoid microstructure influences. The loser industries are sold short and winner industries bought long; these positions last for the following six months. Equal-weighted returns across industries are calculated for long and short positions.

We adapt the methodology of Chan et al. (1996) to ascertain the relationship between stock and industry momentum. They use the independent two-way sort based on return and earnings performance to examine whether stock and earnings momentums are independent. In the setting of stock and industry momentums, we conduct the following two-way sort. Stocks are first sorted into three equal-sized groups based on their prior six-month return performance; they are also independently sorted into three equal-sized groups based on their industries' return performance during the same six months. Within each stock return sorted group, if industry momentum is profitable, stock momentum is deemed not to be driving industry momentum profitability. On the other hand, within each industry return sorted group, if stock momentum continues to be profitable, then industry does not explain stock momentum. If both patterns emerge, one can conclude that stock and industry momentum do not subsume each other and remain independent.

Finally we do not consider transaction costs. Results from both Jegadeesh and Titman (1993) and Korjczyk and Sadka (2004) suggest that inclusion of transaction costs will not affect our results.

### 3. Empirical Analyses and Results

We investigate first whether industry momentum generates any profits and the properties of winner and loser industry portfolios. Then we examine the relationship between stock and industry momentum.

#### 3.1 The Profitability of Industry Momentum

Table 2 displays the properties of industry momentum portfolios. On average, there are 4.78, 4.58, 4.34, 4.00, and 4.27 industries in the Americas (excluding the US), Asia, Europe, the US, and the world, respectively. Since there are several stocks in a single industry, industry momentum portfolios contain enough stocks to secure diversification benefits.

Most importantly, industry momentum strategies demonstrate economically meaningful and statistically significant profits around the globe. For example, the average monthly profits are 0.66% in Canada and 0.40% in the US. Associated  $t$ -statistics are 2.84 and 2.78, respectively.

Averaging across countries reduces data noise at the country level and the results are more reliable. Continental results are computed as equal-weighted averages across all countries of the continent. The Americas (excluding the US), Asia, and Europe demonstrate monthly profits of 0.63, 0.41, and 0.53% with statistically significant  $t$ -statistics of 2.67, 2.05, and 4.10, respectively. Industry momentum proves to be profitable on each continent.

Industry momentum profitability is established in both developed countries and emerging markets, where profits are similarly calculated as equal-weighted averages across all countries within each territory. All developed countries excluding and including the US demonstrate 0.54 and 0.53% gains each month with  $t$ -statistics of 4.44 and 4.97, respectively; emerging countries show an insignificant profit of 0.14%. Not only does industry momentum exist in developed and emerging markets, but the finding that momentum profits are stronger in developed countries than in emerging markets is parallel to that for stock momentum (see, e.g., Rowenhorst, 1998, and Griffin et al., 2003).

The world overall exhibits a similar phenomenon. Industry momentum strategy is globally profitable, returning 0.49% every month for the entire world, with a statistically significant  $t$ -statistic of 4.76. Even excluding the US, the profits remain at 0.49%, with a  $t$ -statistic of 4.20.

Two interesting observations are worth emphasizing. One is that industry momentum is weaker in the US than in other developed countries, which is parallel to the finding for stock momentum (see Rowenhorst, 1998, and Griffin et al., 2003). The other is that the profitability of industry momentum in Asia stands in marked contrast with that of stock momentum, as previous researchers find that stock momentum does not exist in Asian countries (see Griffin et al., 2003, and Chui et al., 2000, among others). Moreover, industry momentum in Asia is comparable to that in the US in both economic magnitude and statistical significance. This observation makes it necessary

to explore the possible interdependence between stock and industry momentum, which follows in Section 3.4.

**Table 2. The Profitability of Industry Momentum**

Region/Country	Begin	# of Industries	W	t(W)	L	t(L)	WML	t(WML)
Argentina	199512	3.04	1.61	(1.81)	-0.71	(-0.54)	2.32	(2.28)
Brazil	199709	3.53	3.53	(1.47)	4.92	(1.99)	-1.39	(-0.70)
Canada	197402	5.82	1.93	(6.34)	1.26	(4.13)	0.66	(2.84)
Chile	199009	3.00	3.09	(4.13)	2.40	(3.31)	0.68	(1.13)
Columbia	199504	3.00	0.98	(1.50)	0.55	(0.47)	0.43	(0.36)
Mexico	199301	3.76	2.25	(2.92)	1.82	(2.06)	0.43	(0.65)
Americas (ex. US)	197402	4.78	2.13	(6.62)	1.49	(4.45)	0.63	(2.67)
Australia	197402	4.99	2.17	(6.60)	1.44	(4.52)	0.73	(2.95)
China	199712	3.70	4.68	(2.75)	1.39	(0.97)	3.29	(2.90)
Hong Kong	198903	3.82	2.16	(2.20)	1.41	(1.52)	0.75	(1.03)
India	199102	3.36	4.28	(2.86)	2.01	(1.90)	2.27	(2.30)
Indonesia	199511	3.16	1.37	(0.85)	3.36	(1.38)	-1.99	(-0.99)
Japan	197402	6.16	1.29	(3.97)	0.99	(2.92)	0.30	(0.96)
Malaysia	198702	3.99	2.19	(2.51)	1.92	(2.19)	0.27	(0.44)
New Zealand	199208	3.31	1.41	(2.63)	1.20	(1.61)	0.21	(0.35)
Philippines	199702	3.00	1.35	(0.71)	-1.18	(-0.48)	2.54	(1.07)
Singapore	198402	3.68	1.38	(2.17)	1.34	(1.96)	0.04	(0.08)
South Korea	198810	4.26	0.95	(1.03)	2.05	(1.75)	-1.10	(-1.19)
Taiwan	199906	3.00	1.01	(0.45)	-1.32	(-0.73)	2.33	(1.27)
Thailand	199403	3.00	0.21	(0.18)	0.62	(0.33)	-0.41	(-0.33)
Asia	197402	4.58	1.90	(6.70)	1.49	(4.83)	0.41	(2.05)
Austria	199408	3.17	1.51	(2.42)	-0.13	(-0.23)	1.63	(2.82)
Belgium	197402	3.66	2.02	(5.71)	0.64	(1.94)	1.38	(4.27)
Denmark	198905	3.02	1.69	(3.67)	1.40	(3.08)	0.28	(0.64)
Finland	199101	3.66	2.80	(3.85)	1.96	(2.30)	0.84	(1.14)
France	197402	4.77	1.88	(5.29)	1.29	(3.32)	0.59	(2.47)
Germany	197402	4.79	1.47	(5.01)	0.67	(2.30)	0.80	(3.24)
Greece	199806	3.13	2.38	(0.90)	4.53	(1.66)	-2.15	(-0.91)
Ireland	198712	3.53	1.46	(3.08)	1.45	(2.46)	0.01	(0.02)
Italy	197402	4.13	2.00	(4.51)	1.11	(2.29)	0.89	(2.86)
Netherlands	197402	4.24	1.65	(5.05)	1.27	(3.60)	0.39	(1.43)
Norway	199501	3.51	1.49	(1.79)	1.61	(2.28)	-0.12	(-0.23)
Portugal	199812	3.01	-1.24	(-1.03)	-0.24	(-0.24)	-1.00	(-1.00)
South Africa	199102	3.80	3.19	(4.33)	1.84	(2.46)	1.36	(1.91)
Spain	198804	4.63	1.21	(2.43)	0.76	(0.95)	0.45	(0.77)
Sweden	199001	3.63	2.32	(3.43)	1.89	(2.29)	0.43	(0.65)
Switzerland	197402	3.74	1.56	(5.06)	0.76	(2.48)	0.80	(3.19)
Turkey	199201	4.07	8.18	(4.46)	9.99	(5.20)	-1.81	(-1.43)
United Kingdom	197102	6.38	1.75	(5.50)	1.60	(4.50)	0.15	(0.72)
Europe	197102	4.34	1.82	(7.55)	1.29	(4.99)	0.53	(4.10)
United States	196308	4.00	1.25	(4.98)	0.85	(3.44)	0.40	(2.78)
Developed (ex. US)	197102	4.60	1.69	(7.44)	1.15	(4.87)	0.54	(4.44)
Developed	196308	4.39	1.55	(7.75)	1.02	(4.96)	0.53	(4.97)
Emerging	198702	3.53	2.87	(5.13)	2.73	(4.43)	0.14	(0.40)
World (ex. US)	197102	4.45	1.81	(7.92)	1.32	(5.42)	0.49	(4.20)
World	196308	4.27	1.65	(8.16)	1.15	(5.44)	0.49	(4.76)

Notes: This table reports the beginning month, average number of industries in winner and loser portfolios, monthly returns from winners (W) and losers (L), and monthly industry momentum profits (WML). Returns are in percentages and associated *t*-statistics are in parentheses.

Two additional notes are worth mentioning at this point. First, one should naturally address the question of whether these momentum results hold once the

available data from 2000 onwards are included. The answer to this question is positive. Momentum results are almost universally stronger and especially so for emerging markets. Second, the question of transaction costs must be discussed. Does the inclusion of transaction costs eliminate the recorded momentum profits? For the US, several studies have found that transaction cost does not eliminate momentum profits (Jegadeesh and Titman, 1993; Korjczyk and Sadka, 2004). Since the cost can be substantial in emerging markets, one can imagine that taking transaction costs into account might diminish or even eliminate momentum profits. On the one hand, industry momentum profits can be sought by using an index where typically costs are much lower. On the other hand, some of the momentum profits we document are quite significant in magnitude (and especially so for emerging markets once one takes into account more recent data), and it seems reasonable to believe that considering transaction costs is not likely to alter the fundamental patterns.

In short, analyzing industry momentum profitability in both the US and other countries demonstrates that industry momentum strategies are profitable around the globe. The profits are economically meaningful and statistically reliable.

We now take a closer look at the long and short sides and the seasonality of momentum portfolios.

### 3.2 Industry Momentum Profits: Long and Short Sides

To ascertain whether industry momentum profits come from winner or loser industries, contemporaneous market returns are subtracted from winner and loser industry portfolio returns. Table 3 contains the results. Since there are missing observations for market returns, adjusted returns for winner and loser industry portfolios also have missing observations; as a result, the momentum profits are sometimes slightly different from those in Table 2. Previous studies have adjusted momentum profits according to the strategy's risk exposure. Jegadeesh and Titman (1993) find that CAPM cannot explain momentum. Fama and French (1996) and Jegadeesh and Titman (2001) both find that the Fama-French three-factor model cannot account for momentum either. Grundy and Martin (2001) demonstrate that adjusting by the conditional Fama-French model increases momentum profits while Griffin et al. (2003) discover that unconditional and conditional models fail to capture momentum. For simplicity, we just use market-adjusted returns.

Winner industries significantly outperform local markets in the US and 33 international countries, amounting to 89.5% of the 38 countries in the sample. For instance, in the US, winner industries outperform the market by 0.30% per month ( $t$ -statistic 2.59). The winner position in the UK outperforms by 0.28 ( $t$ -statistic 2.19). Although there is no significant industry momentum in Japan, winner industries there outperform the local market by 0.54% ( $t$ -statistic of 3.29).

At regional and world levels, winner industries persist in beating local markets. In the Americas (excluding the US), Asia, and Europe, winner industries outperform local markets by 0.93, 0.72, and 0.45%, respectively. These differences are also statistically significant with  $t$ -statistics of 5.50, 5.95, and 5.43, respectively. Developed countries excluding and including the US outperform the markets by 0.49

and 0.48%, respectively. Interestingly, emerging markets outperform local markets by a high 0.92%. All the countries in the sample outperform their respective local markets by 0.55% with a *t*-statistic of 7.88.

**Table 3. Market-adjusted Industry Momentum**

Region/Country	W-MKT	t(W-MKT)	L-MKT	t(L-MKT)	WML	t(WML)
Argentina	0.84	(1.16)	-1.48	(-1.83)	2.32	(2.28)
Brazil	2.27	(1.66)	3.51	(1.65)	-1.24	(-0.55)
Canada	0.87	(5.32)	0.18	(0.95)	0.70	(2.95)
Chile	0.92	(2.01)	0.24	(0.56)	0.68	(1.13)
Columbia	1.29	(1.69)	0.86	(1.10)	0.43	(0.36)
Mexico	0.53	(1.16)	0.21	(0.37)	0.31	(0.47)
Americas (ex. US)	0.93	(5.50)	0.30	(1.59)	0.63	(2.65)
Australia	0.83	(4.13)	0.08	(0.39)	0.75	(3.02)
China	3.19	(3.74)	0.38	(0.89)	2.81	(2.92)
Hong Kong	0.45	(0.71)	-0.31	(-0.51)	0.75	(1.03)
India	1.98	(3.06)	-0.06	(-0.11)	2.03	(2.17)
Indonesia	0.69	(0.65)	2.97	(1.87)	-2.28	(-1.14)
Japan	0.54	(3.29)	0.28	(1.26)	0.26	(0.84)
Malaysia	0.84	(2.26)	0.57	(1.39)	0.27	(0.44)
New Zealand	0.51	(1.37)	0.30	(0.62)	0.21	(0.35)
Philippines	2.30	(1.47)	-0.24	(-0.17)	2.54	(1.07)
Singapore	0.59	(1.81)	0.58	(1.48)	0.01	(0.03)
South Korea	0.19	(0.38)	1.29	(1.70)	-1.10	(-1.19)
Taiwan	2.27	(2.37)	-0.06	(-0.03)	2.33	(1.27)
Thailand	0.75	(1.33)	1.16	(1.12)	-0.41	(-0.33)
Asia	0.72	(5.95)	0.33	(2.16)	0.39	(1.97)
Austria	1.24	(2.58)	-0.39	(-1.10)	1.63	(2.82)
Belgium	0.93	(4.19)	-0.44	(-1.93)	1.38	(4.27)
Denmark	0.47	(1.38)	0.19	(0.66)	0.28	(0.64)
Finland	-0.17	(-0.40)	-1.01	(-1.51)	0.84	(1.14)
France	0.40	(2.93)	-0.19	(-1.10)	0.59	(2.47)
Germany	0.44	(2.59)	-0.36	(-1.95)	0.80	(3.24)
Greece	0.89	(0.60)	3.45	(1.70)	-2.56	(-1.17)
Ireland	-0.19	(-0.45)	-0.20	(-0.43)	0.01	(0.02)
Italy	0.52	(2.75)	-0.42	(-1.78)	0.95	(3.18)
Netherlands	0.27	(1.31)	-0.12	(-0.47)	0.39	(1.43)
Norway	0.28	(0.58)	0.40	(1.01)	-0.12	(-0.23)
Portugal	-1.39	(-2.12)	-0.39	(-0.48)	-1.00	(-1.00)
South Africa	1.64	(3.06)	0.22	(0.39)	1.42	(1.95)
Spain	-0.02	(-0.09)	-0.52	(-0.92)	0.50	(0.85)
Sweden	0.74	(2.11)	0.31	(0.54)	0.43	(0.65)
Switzerland	0.45	(2.46)	-0.32	(-1.60)	0.77	(3.14)
Turkey	0.74	(0.99)	2.56	(2.47)	-1.81	(-1.43)
United Kingdom	0.28	(2.19)	0.13	(0.84)	0.15	(0.73)
Europe	0.45	(5.43)	-0.09	(-0.81)	0.53	(4.13)
United States	0.30	(2.59)	-0.09	(-0.66)	0.39	(1.98)
Developed (ex. US)	0.49	(6.44)	-0.04	(-0.47)	0.54	(4.47)
Developed	0.48	(6.50)	-0.04	(-0.45)	0.52	(4.41)
Emerging	0.92	(4.65)	0.79	(3.12)	0.13	(0.36)
World (ex. US)	0.56	(7.83)	0.08	(0.81)	0.49	(4.18)
World	0.55	(7.88)	0.08	(0.83)	0.48	(4.13)

Notes: This table reports the beginning month, average number of industries in winner and loser portfolios, monthly returns from winners (W) and losers (L), and monthly industry momentum profits (WML). Returns are in percentages and their *t*-statistics are in parentheses.

Loser industries outperform local markets in 5 out of the 6 countries in the Americas (excluding the US), 9 out of the 13 countries in Asia, and 7 out of the 18



countries in Europe. Aggregating within each continent shows that the Americas (excluding the US) and Asia outperform local markets, yet Europe and the US underperform by 0.09% with insignificant  $t$ -statistics. Developed countries including and excluding the US underperform local markets, yet emerging markets and the entire world excluding and including the US all outperform the market.

### 3.3 Market-Adjusted Industry Momentum in January and non-January Months

It is well documented that individual stocks earn higher returns in January (Rozeff and Kinney, 1976; Gultekin and Gultekin, 1983). Although there is no consensus on the fundamental reason, the main explanations put forth have been the tax-loss selling at the end of December and the window dressing by institutional investors. Ascertaining the driving force for the January effect is beyond the scope of this paper; we simply investigate the return performance of industry momentum strategy in January and non-January months.

Table 4 displays market-adjusted returns in January from winners, losers, and industry momentum portfolios, where the market-adjusted return is calculated as portfolio return minus contemporaneous market return. Compared with the profits across all months in Table 3, industry momentum profits in January are remarkably much larger in all regions and continents except the US. In contrast with the year-round momentum profits of 0.63, 0.39, and 0.53% in the Americas (excluding the US), Asia, and Europe, respectively, the profits in January are much greater: 1.77, 0.66, and 0.72%, respectively. The US is a notable exception: the profit in all months is 0.39% yet the strategy delivers 0.09% in January.

The pattern holds in developed and emerging markets. One interesting result is that, unlike stock momentum, industry momentum in January returns more in emerging markets than developed markets.

A closer look at winner and loser industry performance shows some intriguing patterns. Similar to industry momentum profits, the market-adjusted returns from winner industries are much higher in January than in all months. In the Americas (excluding the US), for instance, winner industries earn a market-adjusted return of 0.93% in all months and 2.35% in January. However, the variability in January is also much larger. For example, no country earns negative returns in all months. In contrast, 2 out of 5 countries earn negative returns in January. Because of the higher variation, the higher return of 2.35% in January comes with a lower  $t$ -statistic of 3.69, relative to the stronger significance of a  $t$ -statistic of 5.50 for year-round profit.

For winner industries in January, the pattern of higher market-adjusted returns with lower statistical significance persists in other countries and regions, with the US the notable exception. Market-adjusted winner returns in January versus those in all months are 0.79 (1.51) versus 0.72 (5.95) for Asia, 0.94 (2.49) versus 0.45 (5.43) for Europe, 0.94 (3.08) versus 0.48 (6.50) for all developed countries, 1.50 (2.73) versus 0.92 (4.65) for emerging countries, and 0.91 (3.32) versus 0.55 (7.88) for all countries in the world ( $t$ -statistics in parentheses). Strikingly, in the US, market-adjusted winner industries earn 0.21% in January, lower than the 0.30% in all months.

Table 4. Market-Adjusted Industry Momentum in January

Region/Country	W-MKT	t(W-MKT)	L-MKT	t(L-MKT)	WML	t(WML)
Argentina	0.94	(0.43)	-3.79	(-1.20)	4.73	(1.33)
Brazil	6.42	(2.94)	-6.05	(-0.64)	12.47	(1.50)
Canada	2.05	(4.00)	0.83	(1.20)	1.22	(1.50)
Chile	3.56	(1.75)	-1.64	(-1.43)	5.20	(2.33)
Columbia	-1.82	(-0.41)	0.51	(0.11)	-2.33	(-0.37)
Mexico	-0.28	(-0.18)	3.56	(1.33)	-3.84	(-1.41)
Americas (ex. US)	2.35	(3.69)	0.59	(0.77)	1.77	(1.82)
Australia	1.33	(1.59)	0.94	(1.03)	0.39	(0.38)
China	5.88	(2.59)	-1.34	(-0.82)	7.22	(1.88)
Hong Kong	-0.71	(-0.41)	-3.24	(-1.75)	2.53	(1.06)
India	1.94	(0.68)	-2.29	(-1.33)	4.22	(1.15)
Indonesia	-3.51	(-0.61)	-2.97	(-0.84)	-0.54	(-0.10)
Japan	0.36	(0.60)	1.03	(1.32)	-0.67	(-0.61)
Malaysia	1.94	(1.12)	-0.72	(-0.65)	2.67	(1.17)
New Zealand	-1.39	(-0.99)	0.77	(0.44)	-2.15	(-0.83)
Philippines	-3.88	(-1.09)	4.41	(1.08)	-8.29	(-1.11)
Singapore	-0.11	(-0.09)	-1.56	(-1.52)	1.45	(0.99)
South Korea	0.35	(0.33)	1.75	(0.73)	-1.40	(-0.53)
Taiwan	-3.98	.	4.14	.	-8.12	.
Thailand	-0.92	(-0.56)	2.49	(1.70)	-3.40	(-1.60)
Asia	0.79	(1.51)	0.13	(0.23)	0.66	(0.96)
Austria	5.33	(2.45)	2.98	(1.29)	2.35	(0.97)
Belgium	1.82	(2.14)	-1.09	(-1.15)	2.91	(2.64)
Denmark	0.98	(0.68)	1.60	(0.87)	-0.62	(-0.30)
Finland	-0.56	(-0.51)	-1.35	(-0.71)	0.79	(0.37)
France	0.72	(1.15)	1.95	(2.23)	-1.23	(-0.96)
Germany	1.81	(1.60)	-0.23	(-0.35)	2.04	(1.44)
Greece	-7.27	(-5.17)	-0.61	(-1.89)	-6.66	(-6.14)
Ireland	-0.66	(-0.42)	-1.96	(-1.23)	1.30	(0.68)
Italy	0.71	(0.97)	-0.76	(-0.81)	1.48	(1.44)
Netherlands	1.54	(1.88)	1.53	(2.00)	0.01	(0.01)
Norway	-0.03	(-0.01)	0.42	(0.32)	-0.44	(-0.27)
Portugal	0.44	(0.10)	-2.18	(-0.57)	2.62	(4.04)
South Africa	2.87	(2.40)	-0.03	(-0.02)	2.90	(1.68)
Spain	0.93	(0.79)	1.71	(1.28)	-0.78	(-0.40)
Sweden	2.21	(1.19)	1.98	(0.92)	0.23	(0.09)
Switzerland	1.94	(2.05)	0.76	(1.19)	1.18	(0.98)
Turkey	0.90	(0.37)	-1.46	(-0.36)	2.36	(0.56)
United Kingdom	0.24	(0.33)	0.65	(1.02)	-0.42	(-0.43)
Europe	0.94	(2.49)	0.22	(0.70)	0.72	(1.57)
United States	0.21	(0.50)	0.12	(0.21)	0.09	(0.11)
Developed (ex. US)	0.98	(3.10)	0.26	(0.94)	0.72	(1.74)
Developed	0.94	(3.08)	0.25	(0.93)	0.70	(1.66)
Emerging	1.50	(2.73)	-0.65	(-1.05)	2.15	(2.71)
World (ex. US)	0.95	(3.33)	0.16	(0.57)	0.79	(2.00)
World	0.91	(3.32)	0.15	(0.58)	0.76	(1.89)

Notes: This table reports market-adjusted returns in January for winners (W-MKT), losers (L-MKT), and industry momentum portfolios (WML). Returns are in percentages and associated *t*-statistics are in parentheses.

Similar to winner industries, loser industries also earn higher returns and exhibit more variation in January than in all months. Market-adjusted loser returns in January versus all months are, 0.59 (0.77) versus 0.30 (1.59) for the Americas (excluding the US), 0.22 (0.70) versus -0.09 (-0.81) for Europe, 0.12 (0.21) versus -0.09 (-0.66) for the US, 0.25 (0.93) versus -0.04 (-0.45) for developed countries, and 0.15 (0.58) versus 0.08 (0.83) for the world (*t*-statistics in parentheses). Exceptions are Asia and

emerging markets, where the results are 0.13 (0.23) versus 0.33 (2.16) for Asia and  $-0.65$  ( $-1.05$ ) versus 0.79 (3.12) for emerging markets.

Comparing winner and loser industries, the US is an exception and shows an abnormal pattern: Winner industries earn lower returns and loser industries earn higher returns in January than in all months. This might have to do with the tax-loss selling behavior from individual and institutional investors. The loser industries rebound at the beginning of January from excessive selling at the end of the previous year, resulting in a loss to the momentum strategy.

Table 5 captures the behavior of industry momentum strategy in non-January periods. The profits are lower than those in all months for all regions except the US: 0.53% in non-January versus 0.63% in all months for the Americas (excluding the US), 0.37% versus 0.39% in Asia, and 0.52% versus 0.53% in Europe. Aggregating countries at developed, emerging, and world levels show a similar pattern. In the US, however, the non-January profit of 0.41% is higher than its overall performance of 0.39%.

In non-January months, winner industries consistently outperform local markets in 34 out of the 38 countries in the sample. The Americas (excluding the US) beat the local markets by 0.80%. Asia and Europe outperform by 0.72 and 0.40%, respectively. Developed countries in these territories excluding and including the US and emerging markets outperform local markets by 0.45, 0.44, and 0.87%, respectively. The US, the world excluding the US, and all countries in the sample demonstrate higher returns in excess of local markets by 0.30, 0.53, and 0.52%, respectively. Not only are the excess returns economically large, but they are strongly statistically significant with  $t$ -statistics ranging from 2.55 in the US to 5.82 in all developed countries.

Comparing loser industries with local markets presents a qualitatively similar pattern, only with excess returns of smaller magnitudes. Four out of 6 countries in the Americas (excluding the US) outperform local markets, resulting in an average excess return of 0.27%. Ten out of 13 countries in Asia beat local markets, and all Asian countries return 0.35% higher than local markets with a statistically significant  $t$ -statistic of 2.18. Similar to individual stock momentum, loser industry momentum portfolio in Europe underperforms local markets with 11 out of 18 countries falling short, and the average return is 0.11% lower than local markets. Interestingly, the same magnitude of underperformance exists in the US with a slightly weaker  $t$ -statistic.

In summary, this section shows interesting behavior of industry momentum in January and non-January months. With the exception of the US, the momentum returns in January are higher than the returns in all months. This finding is in marked contrast with stock momentum, for which profits in January are lower than in all months (see for instance Griffin et al., 2003). However, in January alone, industry momentum is similar to stock momentum in that the profit is higher in emerging markets than in developed countries. These differences make it interesting and necessary to disentangle the relationship between individual stock and industry momentum.

**Table 5. Market-Adjusted Industry Momentum in non-January Months**

Region/Country	W-MKT	t(W-MKT)	L-MKT	t(L-MKT)	WML	t(WML)
Argentina	0.83	(1.08)	-1.28	(-1.52)	2.10	(1.98)
Brazil	1.96	(1.34)	4.25	(1.95)	-2.29	(-1.01)
Canada	0.77	(4.49)	0.12	(0.62)	0.65	(2.63)
Chile	0.69	(1.49)	0.40	(0.89)	0.29	(0.47)
Columbia	1.53	(2.04)	0.89	(1.14)	0.64	(0.54)
Mexico	0.59	(1.24)	-0.05	(-0.09)	0.65	(0.95)
Americas (ex. US)	0.80	(4.64)	0.27	(1.42)	0.53	(2.18)
Australia	0.78	(3.81)	0.01	(0.02)	0.78	(3.06)
China	2.96	(3.27)	0.53	(1.20)	2.42	(2.46)
Hong Kong	0.55	(0.82)	-0.06	(-0.09)	0.61	(0.79)
India	1.98	(2.99)	0.13	(0.24)	1.85	(1.91)
Indonesia	1.06	(1.02)	3.49	(2.07)	-2.44	(-1.14)
Japan	0.56	(3.25)	0.21	(0.93)	0.35	(1.05)
Malaysia	0.75	(1.98)	0.68	(1.56)	0.07	(0.10)
New Zealand	0.67	(1.75)	0.26	(0.51)	0.41	(0.67)
Philippines	2.72	(1.66)	-0.56	(-0.38)	3.27	(1.34)
Singapore	0.65	(1.91)	0.76	(1.84)	-0.11	(-0.21)
South Korea	0.17	(0.32)	1.25	(1.56)	-1.07	(-1.09)
Taiwan	2.62	(2.77)	-0.30	(-0.15)	2.91	(1.59)
Thailand	0.88	(1.48)	1.05	(0.95)	-0.17	(-0.13)
Asia	0.72	(5.77)	0.35	(2.18)	0.37	(1.77)
Austria	0.89	(1.90)	-0.68	(-2.11)	1.57	(2.63)
Belgium	0.86	(3.71)	-0.39	(-1.64)	1.24	(3.69)
Denmark	0.43	(1.22)	0.07	(0.26)	0.36	(0.81)
Finland	-0.14	(-0.30)	-0.98	(-1.38)	0.84	(1.08)
France	0.37	(2.69)	-0.38	(-2.24)	0.75	(3.21)
Germany	0.32	(2.07)	-0.37	(-1.93)	0.69	(2.90)
Greece	1.46	(0.95)	3.73	(1.73)	-2.28	(-0.98)
Ireland	-0.14	(-0.34)	-0.04	(-0.08)	-0.10	(-0.17)
Italy	0.50	(2.57)	-0.40	(-1.61)	0.90	(2.89)
Netherlands	0.16	(0.75)	-0.26	(-1.00)	0.42	(1.46)
Norway	0.31	(0.62)	0.40	(0.95)	-0.09	(-0.16)
Portugal	-1.55	(-2.41)	-0.23	(-0.27)	-1.32	(-1.24)
South Africa	1.54	(2.69)	0.24	(0.40)	1.30	(1.68)
Spain	-0.10	(-0.42)	-0.71	(-1.18)	0.61	(0.99)
Sweden	0.60	(1.76)	0.15	(0.26)	0.45	(0.66)
Switzerland	0.32	(1.78)	-0.41	(-1.99)	0.73	(2.99)
Turkey	0.73	(0.92)	2.92	(2.74)	-2.19	(-1.65)
United Kingdom	0.28	(2.27)	0.08	(0.53)	0.20	(0.97)
Europe	0.40	(4.86)	-0.11	(-1.00)	0.52	(3.83)
United States	0.30	(2.55)	-0.11	(-0.78)	0.41	(2.07)
Developed (ex. US)	0.45	(5.75)	-0.07	(-0.72)	0.52	(4.14)
Developed	0.44	(5.82)	-0.07	(-0.69)	0.51	(4.10)
Emerging	0.87	(4.16)	0.92	(3.41)	-0.04	(-0.11)
World (ex. US)	0.53	(7.15)	0.07	(0.69)	0.46	(3.77)
World	0.52	(7.21)	0.07	(0.72)	0.45	(3.75)

Notes: This table reports market-adjusted returns in non-January months for winners (W-MKT), losers (L-MKT), and industry momentum portfolios (WML). Returns are in percentages and associated *t*-statistics are in parentheses.

### 3.4 The Relation between Stock and Industry Momentum

To examine the relationship between stock and industry momentum, we follow the typical two-step procedure. The first step is to check whether the industry momentum uncovered above is subsumed by individual stock momentum. The

second step goes in the opposite direction and tests whether stock momentum is only a manifestation of industry momentum.

To this end, we carry out a two-way sort. At the end of each month, stocks within each country are sorted into three equal-sized groups based on their past six-month returns. Independent sort based on industry momentum during the same period assigns stocks into three equal-sized groups. These two-way sorts generate nine portfolios, and their returns over the next six months are calculated.

#### **3.4.1 Does Industry Momentum Exist When Stock Momentum is Controlled for?**

If industry momentum is not determined by stock momentum, then among stocks that have similar returns in the recent past, industry momentum should remain profitable. Table 6 captures the idea and reports monthly industry momentum profits within loser stocks, medium performance stocks, and winner stocks.

The first two columns of Table 6 show that, among stocks that performed poorly in the past six months, buying winner industry stocks and selling loser industry stocks prove to be profitable. This strategy generates excess returns of 0.50% in the Americas (excluding the US), 0.38% in Asia, 0.28% in Europe, and 0.35% in the US. All these profits are statistically significant with  $t$ -statistics of 2.31, 2.53, 3.54, and 3.68, respectively. This pattern continues in developed countries, emerging markets, and the world as a whole. Excluding and including the US, developed countries earn 0.25% and 0.29% with  $t$ -statistics of 3.82 and 4.00, respectively. One interesting result is that the profit is even larger in emerging markets: 0.49% with a  $t$ -statistic of 2.59. Overall, the world earns 0.33% every month; the associated  $t$ -statistic is 4.50.

In the medium stock momentum category, 5 out of 6 countries in the Americas (excluding the US) demonstrate positive profits, resulting in an average 0.49% return with a  $t$ -statistic of 2.66 for the continent. Asia continues to have profitable industry momentum: 12 out of 13 countries show positive returns. Notably, Japan has a significant return of 0.23%. Asia overall shows a significant 0.28% profit with a  $t$ -statistic of 2.75. Similarly, industry momentum works well in Europe and the US, with an average monthly return of 0.20 and 0.29%, respectively. Aggregating at developed, emerging, and world levels confirms the finding, where the profits are 0.23, 0.39, and 0.26% with  $t$ -statistics of 4.85, 2.58, and 5.41, respectively.

The last two columns of Table 6 contain industry momentum profits in stocks that performed well in the past. Monthly industry momentum profits are 1.14, 0.20, 0.02, and 0.54% in the Americas (excluding the US), Asia, Europe, and the US, respectively. For the Americas, the profits are significant and even larger than in low and medium stock return groups. Emerging markets continue to exhibit a return of 0.40%, higher than the 0.24% in developed countries. The world as a whole demonstrates excess profits of 0.28% with a significant  $t$ -statistics of 4.03.

In summary, the results in Table 6 demonstrate that, even after individual stock momentum is controlled for, industry momentum continues to be profitable. The remaining question is: Will stock momentum persist in the presence of industry momentum? This issue is addressed next.

**Table 6. The Existence of Industry Momentum in the Presence of Stock Momentum**

Region/Country	Low Return Stocks		Medium Return Stocks		High Return Stocks	
	Industry WML	t	Industry WML	t	Industry WML	t
Argentina	2.08	(0.74)	0.20	(0.18)	0.44	(0.28)
Brazil	0.31	(0.28)	-0.83	(-0.96)	-0.08	(-0.07)
Canada	0.46	(2.17)	0.51	(2.63)	0.95	(3.38)
Chile	1.05	(2.40)	0.80	(2.19)	0.96	(1.81)
Mexico	1.07	(2.12)	0.42	(0.88)	1.87	(2.00)
Peru	-1.37	(-0.73)	1.42	(1.12)	6.83	(1.20)
Americas (ex. US)	0.50	(2.31)	0.49	(2.66)	1.14	(3.70)
Australia	0.60	(1.96)	0.31	(1.39)	0.43	(1.17)
China	-0.08	(-0.29)	0.04	(0.14)	-0.35	(-1.23)
Hong Kong	-0.10	(-0.25)	0.11	(0.40)	0.39	(0.99)
India	0.80	(2.14)	0.29	(0.93)	0.32	(0.89)
Indonesia	-0.25	(-0.34)	0.94	(1.41)	1.19	(1.41)
Japan	0.34	(2.42)	0.23	(2.36)	0.19	(1.59)
Malaysia	0.52	(1.51)	0.53	(2.22)	0.59	(1.63)
Pakistan	0.98	(2.26)	0.29	(0.87)	-0.15	(-0.20)
Philippines	-0.79	(-0.54)	0.64	(0.59)	-0.35	(-0.31)
Singapore	-0.13	(-0.45)	0.04	(0.17)	0.23	(0.77)
South Korea	-0.31	(-0.90)	-0.11	(-0.33)	-0.47	(-1.18)
Taiwan	1.02	(2.08)	0.21	(0.72)	-0.02	(-0.08)
Thailand	1.60	(2.02)	1.28	(1.91)	0.06	(0.07)
Asia	0.38	(2.53)	0.28	(2.75)	0.20	(1.41)
Austria	0.19	(0.47)	0.09	(0.36)	0.74	(1.63)
Belgium	0.58	(2.29)	-0.06	(-0.33)	-0.16	(-0.63)
Denmark	0.52	(1.74)	0.44	(1.31)	-0.49	(-1.37)
Finland	0.36	(0.58)	1.18	(2.44)	0.01	(0.01)
France	0.26	(1.60)	0.31	(2.39)	0.46	(2.20)
Germany	0.16	(1.18)	0.00	(-0.00)	0.13	(0.96)
Greece	-2.53	(-2.35)	-3.03	(-2.66)	-0.92	(-0.99)
Ireland	-0.41	(-0.37)	-0.07	(-0.09)	-0.11	(-0.08)
Italy	0.67	(2.55)	0.61	(2.98)	-0.05	(-0.18)
Netherlands	0.25	(1.33)	0.18	(1.38)	-0.27	(-0.86)
Norway	0.77	(1.75)	-0.04	(-0.10)	-0.99	(-1.34)
Portugal	0.81	(1.59)	0.89	(1.32)	0.37	(0.43)
South Africa	0.85	(2.04)	0.37	(1.07)	0.64	(1.14)
Spain	-0.70	(-1.39)	-0.30	(-0.91)	-0.22	(-0.38)
Sweden	-0.30	(-0.65)	-0.06	(-0.19)	-0.96	(-1.89)
Switzerland	0.20	(1.37)	0.03	(0.26)	-0.07	(-0.40)
Turkey	0.61	(1.00)	0.72	(1.30)	0.28	(0.41)
United Kingdom	0.18	(1.95)	0.17	(2.40)	0.39	(3.34)
Europe	0.28	(3.54)	0.20	(3.49)	0.02	(0.27)
United States	0.35	(3.68)	0.29	(3.81)	0.54	(5.01)
Developed (ex. US)	0.25	(3.82)	0.22	(4.12)	0.13	(1.58)
Developed	0.29	(4.00)	0.23	(4.85)	0.24	(3.40)
Emerging	0.49	(2.59)	0.39	(2.58)	0.40	(2.01)
World (ex. US)	0.27	(4.15)	0.25	(4.94)	0.19	(2.50)
World	0.33	(4.50)	0.26	(5.41)	0.28	(4.03)

Notes: This table reports monthly return differences within each stock momentum group. The first two columns display industry momentum profits and associated  $t$ -statistics for the group of "Low Return Stocks," which are the stocks that performed poorly in the past. Similar results are reported for medium and high return stock groups.

### 3.4.2 Does Stock Momentum Exist When Industry Momentum is Controlled for?

If stock momentum is subsumed by industry momentum, then among stocks that have similar industry return performance, buying stocks that perform well in the recent past and selling stocks that do poorly should not generate any profits. On the other hand, if such buying and selling continues to yield profit, then it means stock momentum is not determined by industries.

The results are in Table 7. The first two columns show that, among stocks that have poor industry performance in the past six months, the individual stock momentum strategy of buying winner stocks and selling loser stocks continues to earn significantly positive profits. Five out of 6 countries in the Americas (excluding the US) earn positive returns, resulting in an average monthly profit of 0.49% with a  $t$ -statistic of 2.17. Consistent with the momentum literature, individual stock momentum is not profitable in Asia.

After industry momentum is controlled for, stock momentum continues to be profitable in many other countries, continents, and regions. Fourteen out of 17 European countries earn positive momentum profits. The middle section of Table 7 displays stock momentum profits within the group of medium industry performance. The same pattern in the low industry return group applies with only minor changes.

Stock momentum profitability in stocks that have high industry performance is shown in the last two columns of Table 7. Although stock momentum profits are negative in the Americas (excluding the US), the dominant pattern is that the profits are positive in Asia, Europe, and the US: excess profits are 0.21, 0.70, and 0.45%, respectively, and the latter two profits are statistically significant with  $t$ -statistics of 6.54 and 2.79, respectively. Developed countries excluding the US, the world excluding the US, and the world including the US earn profits of 0.57, 0.48, and 0.39% every month, respectively. These profits are highly significant with  $t$ -statistics of 5.73, 5.05, and 3.16, respectively.

To summarize, this subsection shows that, even after industry momentum is controlled for, individual stock momentum remains profitable. Together with the results presented in the previous subsection that industry momentum endures the effect of stock momentum, the findings collectively show that industry and stock momentum cannot subsume one another and instead remain independent.

## 4. Summary

This paper contributes to the momentum literature with an investigation of the profitability of the industry momentum strategy and its relation to individual stock momentum. We examine the typical six-by-six-month strategy and find that industry momentum is profitable globally. Monthly profit is 0.40% in the US, 0.63% in the Americas (excluding the US), 0.41% in Asia, and 0.53% in Europe. The world overall shows a profit of 0.49% per month. These profits are economically meaningful and statistically significant.

Industry momentum exhibits intriguing patterns in January. In the US, the profit is positive, in contrast with documented negative returns for stock momentum. In other countries, industry momentum profit is also higher in January.

**Table 7. The Existence of Stock Momentum in the Presence of Industry Momentum**

Region/Country	Low Return Industries		Medium Return Industries		High Return Industries	
	Stock WML	t	Stock WML	t	Stock WML	t
Argentina	-0.51	(-0.17)	-0.64	(-0.77)	1.13	(0.74)
Brazil	0.44	(0.51)	0.28	(0.33)	0.83	(0.65)
Canada	0.39	(1.45)	0.50	(2.10)	-0.10	(-0.32)
Chile	0.42	(1.12)	0.92	(2.78)	0.51	(1.13)
Mexico	0.48	(0.80)	0.40	(0.58)	-0.32	(-0.40)
Peru	1.92	(1.04)	-3.29	(-0.98)	-6.29	(-1.16)
Americas (ex. US)	0.49	(2.17)	0.39	(1.77)	-0.15	(-0.51)
Australia	0.20	(0.66)	0.46	(1.47)	0.37	(1.37)
China	-0.27	(-0.52)	0.11	(0.23)	0.01	(0.02)
Hong Kong	0.67	(1.44)	-0.03	(-0.08)	0.18	(0.40)
India	0.51	(1.29)	0.57	(1.51)	0.99	(1.99)
Indonesia	0.09	(0.10)	-0.03	(-0.04)	-1.35	(-1.03)
Japan	-0.20	(-1.12)	-0.09	(-0.54)	-0.05	(-0.25)
Malaysia	-0.11	(-0.27)	-0.12	(-0.27)	-0.18	(-0.31)
Pakistan	0.46	(0.78)	0.42	(0.73)	1.59	(2.24)
Philippines	1.28	(0.68)	0.42	(0.32)	0.85	(0.51)
Singapore	0.39	(1.09)	-0.12	(-0.39)	0.03	(0.06)
South Korea	-0.72	(-1.08)	-0.68	(-0.80)	-0.56	(-0.70)
Taiwan	-0.59	(-1.42)	0.31	(0.77)	0.46	(0.83)
Thailand	-0.67	(-0.81)	-0.12	(-0.17)	0.87	(1.17)
Asia	0.03	(0.19)	0.16	(1.05)	0.21	(1.25)
Austria	0.31	(0.69)	-0.08	(-0.22)	-0.25	(-0.51)
Belgium	0.47	(1.72)	1.01	(4.59)	1.20	(4.30)
Denmark	0.12	(0.40)	0.32	(1.18)	1.12	(2.87)
Finland	0.00	(0.01)	0.43	(0.71)	0.35	(0.40)
France	0.74	(3.61)	0.56	(2.95)	0.54	(2.42)
Germany	0.50	(3.67)	0.46	(3.70)	0.54	(3.51)
Greece	2.74	(2.45)	0.52	(0.53)	1.14	(0.97)
Ireland	0.91	(0.76)	2.15	(2.52)	0.61	(0.41)
Italy	0.22	(0.81)	0.66	(2.81)	0.95	(2.90)
Netherlands	0.47	(1.88)	0.94	(5.26)	0.99	(3.15)
Norway	-1.06	(-1.71)	1.39	(2.35)	0.70	(0.96)
Portugal	-0.35	(-0.53)	-1.43	(-1.89)	0.08	(0.09)
South Africa	0.95	(1.81)	1.64	(3.74)	1.17	(2.44)
Spain	0.78	(1.23)	0.02	(0.04)	0.30	(0.57)
Sweden	0.27	(0.59)	-0.57	(-0.82)	0.93	(1.46)
Switzerland	0.64	(3.61)	0.63	(4.07)	0.90	(4.98)
Turkey	-1.59	(-2.11)	-1.13	(-1.40)	-1.26	(-1.65)
United Kingdom	0.79	(5.87)	0.71	(5.15)	0.57	(4.02)
Europe	0.45	(4.77)	0.55	(6.49)	0.70	(6.54)
United States	0.64	(4.48)	0.64	(4.34)	0.45	(2.79)
Developed (ex. US)	0.40	(4.60)	0.48	(5.93)	0.57	(5.73)
Developed	0.44	(3.94)	0.46	(4.16)	0.44	(3.59)
Emerging	-0.16	(-0.70)	-0.15	(-0.65)	-0.08	(-0.28)
World (ex. US)	0.34	(3.99)	0.39	(5.19)	0.48	(5.05)
World	0.40	(3.59)	0.40	(3.70)	0.39	(3.16)

Notes: This table reports monthly return differences within each industry momentum group. Associated *t*-statistics are in parentheses.



Industry and stock momentum are independent phenomena. In the group of stocks exhibiting similar returns in the past, buying stocks with superior industry performance in the past six months and selling stocks with inferior industry performance within the same period earns significant profits. In contrast, for stocks exhibiting similar industry performance in the past, stocks that perform well in the recent past continue to do well and stocks that earn poor returns tend to continue with poor performance.

The existence of industry momentum and its independence from stock momentum have important implications for the efficiency of financial markets and the role of industry in financial research. Like stock momentum, industry momentum represents a predictable pattern that investors can exploit, which is against the efficient market hypothesis. Additionally, the existence of industry momentum highlights the importance of industry in the return generating process and supports the endeavor of considering industry as an important determinant in financial research (Hong et al., 2007).

## References

- Chan, L. K. C., N. Jegadeesh, and J. Lakonishok, (1996), "Momentum Strategies," *Journal of Finance*, 51, 1681-1713.
- Chordia, T. and L. Shivakumar, (2002), "Momentum, Business Cycle, and Time-Varying Expected Returns," *Journal of Finance*, 57, 985-1019.
- Chui, A. C. W., S. Titman, and J. Wei, (2000), "Momentum, Legal Systems and Ownership Structure: An Analysis of Asian Stock Market," *Working Paper*, University of Texas at Austin.
- Fama, E. F. and K. R. French, (1996), "Multifactor Explanations of Asset Pricing Anomalies," *Journal of Finance*, 51, 55-84.
- Griffin, J. M., X. Ji, and J. S. Martin, (2003), "Momentum Investing and Business Cycle Risk: Evidence from Pole to Pole," *Journal of Finance*, 58, 2515-2547.
- Grundy, B. D. and J. S. Martin, (2001), "Understanding the Nature of the Risks and the Source of the Rewards to Momentum Investing," *Review of Financial Studies*, 14, 29-78.
- Gultekin, M. N. and N. B. Gultekin, (1983), "Stock Market Seasonality: International Evidence," *Journal of Financial Economics*, 12, 469-481.
- Hong, H., W. Torous, and R. Valkanov, (2007), "Do Industries Lead Stock Markets?" *Journal of Financial Economics*, 83, 367-396.
- Jegadeesh, N. and S. Titman, (1993), "Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency," *Journal of Finance*, 48, 65-91.
- Jegadeesh, N. and S. Titman, (2001), "Profitability of Momentum Strategies: An Evaluation of Alternative Explanations," *Journal of Finance*, 56, 699-720.
- Moskowitz, T. J. and M. Grinblatt, (1999), "Do Industries Explain Momentum?" *Journal of Finance*, 54, 1249-1290.
- Rowenhorst, K. G., (1998), "International Momentum Strategies," *Journal of Finance*, 53, 267-284.

Rozeff, M. S. and W. R. Kinney, (1976), "Capital Market Seasonality: The Case of Stock Returns," *Journal of Financial Economics*, 3, 379-402.

Swinkels, L., (2002), "International Industry Momentum," *Journal of Asset Management*, 3, 124-141.