

Return reversal of Latin American industries

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Received 23 July 2025
Revised 29 October 2025
30 November 2025
Accepted 8 December 2025

Abstract

Purpose – This study analyzes inter-industry reversal, or whether loser or underperforming industries yield higher returns than winner or outperforming industries in Latin America. The phenomenon is likewise examined in market segments that are more prone to inefficiencies and short-selling barriers. It also investigates intra-industry reversal by assessing whether loser stocks outperform winner stocks within the same industry. The analysis is then extended to market segments defined by stock characteristics.

Design/methodology/approach – Long-term reversal for industry portfolios is evaluated following the portfolio simulation approach proposed by Jegadeesh and Titman (1993). When testing multiple hypotheses simultaneously, the probability of reporting false positives increases substantially. To account for multiple hypothesis testing, *p*-values are adjusted using several well-established approaches.

Findings – No evidence of inter-industry reversal for the whole market or for specific market segments was found. Moreover, in both the entire market and certain segments, a contrarian intra-industry reversal strategy does not yield profits. Overall, investors in Latin American industries would have been unable to profit from exploiting return reversion across and within industries in the region.

Research limitations/implications – The study focuses on formation periods of up to five years and holding periods of up to a year, as constrained by data availability. This limitation restricts the range of reversal strategies that can be analyzed (e.g. formation periods of a decade are not considered). As additional data become available, this limitation will be less severe.

Practical implications – This paper builds on our previous paper that explored industry return continuation or momentum. Overall, neither momentum nor reversal at the industry level appears to be significant in Latin America's most important equity markets. Violations of weak-form market efficiency at the industry level in Latin America are not supported by our findings.

Originality/value – This paper contributes by providing new evidence on both inter- and within-industry reversal in a region that is frequently overlooked in international studies. It also adds to the literature by analyzing reversal in market segments related to industry and stock characteristics such as size or market cap. In addition, the study addresses the issue of multiple hypotheses testing, which is often neglected in existing literature.

Keywords Contrarian strategy, Emerging stock markets, Five-factor model, Industry portfolios, Multiple hypothesis testing

Paper type Research article

1. Introduction

The issue of return reversal, in which recently underperforming assets achieve higher returns than previously outperforming ones, has garnered considerable attention in the literature. Return reversal has been extensively studied across various asset classes or market segments, including stocks, bonds, energy indices, cryptocurrencies, and, to a lesser extent, industries.

JEL Classification — G11, G12, G15

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This paper contributes to the literature by conducting an out-of-sample analysis of long-term return reversal at the industry level in Latin America. It adds to the debate over whether industry reversal is real (i.e. a true positive in statistical terms) or not (i.e. a false positive or a rejection of the null hypothesis when the null hypothesis is correct) in an important market outside the United States. When multiple hypotheses are tested simultaneously, the probability of reporting false positives increases significantly. To address this phenomenon, p -values are adjusted to account for multiple hypothesis testing (MHT) and assess the statistical significance of the research findings. Several papers in the existing literature on industry reversal (and reversal in other markets) do not consider MHT.

Moreover, this study builds on a previous paper that examined industry return continuation or momentum. In general, neither momentum nor reversal at the industry level appears to be significant in Latin America's most important equity markets. Violations of weak-form market efficiency at the industry level in Latin America are not supported by the research findings.

This research also contributes by providing new evidence on both inter- and within-industry reversal for a region that is frequently overlooked in international studies. It further enriches the literature by analyzing reversals in segments of the market related to industry and stock characteristics such as size or market cap.

2. Literature review

With regard to stocks, [Schierreck et al. \(1999\)](#) examine long-term contrarian strategies on the Frankfurt Stock Exchange, finding that reversal strategies are profitable using holding periods of up to five years. The differences in risk (proxied by beta, company size and share price levels) between loser and winner portfolios do not explain the profitability of a reversal portfolio. [Bildik and Gulay \(2007\)](#) show that on the Istanbul Stock Exchange, low past-return stocks outperform high past-return stocks, indicating a reversal effect. This reversal effect appears not only in past returns but also in relation to price or size, where low-price (market cap) stocks outperform high-price (market cap) stocks, and the book-to-market (B/M) ratio and the earnings-to-price (E/P) ratio, where high B/M (E/P) stocks yield more than low B/M (E/P) stocks. [Ramiah et al. \(2011\)](#) observed significant reversal effects in mean returns for cross-listed (or dually-traded) stocks in Hong Kong, though not for stocks listed only on the island. Reversal profits in Hong Kong primarily originate from loser portfolios. However, after adjusting for systematic risk, reversal alphas largely cancel out and remain mostly statistically insignificant. [Wu et al. \(2012\)](#) report evidence consistent with long-term contrarian performance on the London Stock Exchange. They also analyze reversal for low-, mid- and high-priced stocks, identifying low-priced stocks as the primary source of contrarian performance, as they are typically held by individual (rather than institutional) investors who are more prone to behavioral biases. Additionally, low-priced stocks often belong to small-cap companies and are associated with higher transaction and distress costs. In France, [Galarionis \(2012\)](#) reports evidence of long-term reversal, with returns to a contrarian strategy mainly driven by the reversal of loser stocks. Moreover, reversal is more acute when using lower breakpoint percentiles to create portfolios. For example, contrarian profits are higher with a decile portfolio of losers and winners than with a quintile portfolio of losers and winners. In China, [Shi and Zhou \(2017\)](#) identify that profits from contrarian strategies are time-varying. For some periods (e.g. using five-year rolling windows), reversal strategies produce positive returns, while yielding zero (or negative) returns in others. [Zhang et al. \(2018\)](#) document a significant reversal effect, both in the very short term and the long term (e.g. close to a 3-year formation period), in the Chinese stock market. Moreover, in China, [Gang et al. \(2019\)](#) find that reversal strategies tend to be more profitable than momentum strategies. According to the authors, this may be attributable to the fact that investors (predominantly retail investors) in China tend to overreact to company cash-flow news, that is, stock returns increase by more than one percent when company fundamental values increase by one percent. Thus, price increases (after positive

cash-flow news) may stretch too far. Eventually, as prices revert to fundamental values, arbitrageurs can profit by shorting overvalued stocks.

For corporate bonds, [Bali et al. \(2021\)](#) provide evidence of long-term reversal in the US. This evidence stands in sharp contrast to findings from the equity market, where return reversal was not statistically significant during the same period (1977–2017). Loser bonds command higher expected returns than winner bonds due to their higher risk (e.g. credit risk) and increased regulatory constraints.

In another market, [Day and Ni \(2023\)](#) examine short-term contrarian strategies based on technical analysis for two clean-energy indices: the S&P Global Clean Energy Index and the Nasdaq Clean Energy Index. Only for the latter do contrarian strategies appear profitable. For cryptocurrencies, [Kosc et al. \(2019\)](#) document a significant short-term contrarian effect.

Return reversal has also been analyzed for industry portfolios. Nevertheless, the number of studies addressing industry reversal remains smaller than those concentrating on stock reversal. Moreover, emerging markets are typically not the focus of papers examining industry reversal.

In the US, [Bornholt et al. \(2015\)](#) tested a contrarian strategy for industry portfolios with formation periods of up to 7 years (and a twelve-month gap between formation and holding periods), finding no evidence of industry reversal. However, when they allow for longer formation periods (eight to eleven years) to account for structural changes, a significant reversal effect (with holding periods of up to a year) is observed. In the UK, [Wu and Mazouz \(2016\)](#) document a significant reversal effect in industry returns where losing industries outperform winning industries over the subsequent five years. They further investigate whether reversal is due to risk (consistent with a rational explanation) or to mispricing (in line with a behavioral explanation). [Zaremba et al. \(2020\)](#) report a decline in anomaly performance at both industry and country levels for the 1973–2018 period using a sample of 64 national markets. One of the anomalies they analyzed is reversal. Specifically, for industry portfolios, a composite reversal strategy (where the authors equally average all returns within the reversal anomaly) using value-weighting does not yield significant risk-adjusted returns. Moreover, [Apergis et al. \(2020\)](#) find evidence of intra-industry reversal for the European and the Asia-Pacific regions (with holding periods of up to a year). Nevertheless, inter-industry reversal is absent in those regions.

For industries, the evidence on reversal is thus conflicting. According to [Bornholt et al. \(2015\)](#), reversal depends on the timeframe used in the formation (or ranking) periods. When formation periods do not exceed seven years, reversal is non-existent. When they exceed seven years, reversal becomes statistically significant. [Apergis et al. \(2020\)](#) also present mixed evidence on reversal. Intra-industry reversal exists, whereas inter-industry reversal does not.

3. Method

3.1 Data and variables

For the stock sample, a methodology similar to that of [Berggrun et al. \(2023\)](#) is employed. The three local exchanges in Colombia merged in July 2001, which marked the beginning of the sample period, ending in June 2024. Both listed and delisted common stocks (to prevent survivorship bias) with domiciles in Argentina, Brazil, Chile, Colombia, Mexico and Peru are included. Data from Bloomberg were incorporated in relation to the number of outstanding shares, the book-to-market ratio of common equity and end-of-month prices in US dollars (USD).

For industry affiliation, the Industry Classification Benchmark (ICB), generated by the Financial Times Stock Exchange (FTSE) Russell (as reported by Bloomberg), was used. The study sample includes 665 equities distributed across ten Latin American industries: basic materials, consumer discretionary, consumer staples, energy, financials, health care, industrials, technology, telecommunications and utilities.

Monthly return series (RET) for industry portfolios in USD are created using the weighted average of stock returns within each industry. A few zero prices are treated as missing values.

For weighting, the market capitalization (CAP, which is the sum of share prices and the number of outstanding shares) from the previous month is taken. Unless otherwise stated, all the (industry) variables are value-weighted (by a stock's CAP in $t-1$). To lessen the impact of outliers, all variables at the bottom 1st and top 99th percentiles at the firm level for each month before constructing industry variables (such as RET or CAP) were winsorized. Industry CAP (the size proxy) is defined as the aggregate monthly market capitalization of all stocks available in each industry.

3.2 Systematic risk model

Yields on US Treasury securities (in USD) represent the risk-free rate (R_f) over one month. The value-weighted return of a portfolio (R_p), which includes all available stocks in each month, serves as a proxy for the market return (R_m). Value-weighting is calculated using market capitalization, defined as the product of the number of shares outstanding and the price of a common share in month $t-1$. The [Fama and French \(2015\)](#) five-factor model (without temporal subscripts) is estimated to consider systematic risk, as follows:

$$R_p - R_f = \alpha_p + b_p(R_m - R_f) + s_pRSMB + h_pRHML + r_pRRMW + c_pRCMA + e, \quad (1)$$

Since factors RSMB (returns to an SMB or small-minus-big portfolio), RHML (returns to high-minus-low book-to-market value of equity portfolio), RRMW (returns to a robust-minus-weak profitability portfolio) and RCMA (returns to a conservative-minus-aggressive investment portfolio) are not available for Latin America, these risk factors are constructed by following a methodology that closely resembles that of [Fama and French \(2015\)](#). [Berggrun et al. \(2020\)](#) provided further information about the factors' construction.

3.3 Analytical procedures: construction of industry reversal portfolios

The monthly returns of long-term reversal portfolios are tabulated following the methodology proposed by [Jegadeesh and Titman \(1993\)](#). All industries in the sample are classified according to their mean returns in J months using return data from the prior months (formation or sorting period) and divided into five portfolios. The first ("loser") portfolio (P1) and the fifth ("winner") portfolio (P5) correspond to the industries with the lowest and highest average returns, respectively.

A reversal strategy consists of financing a long position in the low-recent returns industry portfolio (P1) with a short position in the high-recent returns industry portfolio (P5). This type of strategy is therefore self-financing and requires no initial investment. For the next few months, or the holding period, the strategy is in effect. Monthly returns and returns from comparable strategies that started in prior months are averaged to enhance statistical power and track monthly returns for contrarian portfolios. Using $K = 3$, holding returns for April, for example, are the average of the returns from portfolios that started investing at the beginning of February, March and April. This study tests whether mean and risk-adjusted returns to a reversal portfolio (P1-P5) are positive and statistically significant to establish whether industry reversal is present.

A variety of reversal strategies are used based on the notion that performance reversals can be tested over one or more formation (J), holding (K) and lag (L) periods. Rather than focusing on a specific formation/holding/lag (or gap) window, the study goal is to obtain a more comprehensive understanding of long-term industry reversal and mitigate data-snooping concerns. Accordingly, reversal strategies with formation periods of two, three, four and five years are examined. Holding periods of three, six and twelve months are used. To test for longer-term reversal, holding periods of two, three and four years are also employed. In addition, a zero lag (i.e. no gap between formation and holding periods) is incorporated. Including a one-year lag ($L = 12$) to test longer-term reversal effects does not materially alter the research findings. These results are available upon request. Overall, 24 industry reversal strategies were constructed with various formation/holding/lag windows.

Below, p -values adjusted for multiple hypothesis testing are reported, since the study aims to test each of the 24 null hypotheses separately, and because, by chance alone, small p -values can be found when testing multiple hypotheses (e.g. whether mean returns to P1-P5 portfolios are equal to zero using different formation and holding periods). The adjustment follows [Benjamini and Yekutieli \(2001\)](#) (hereafter “BY”). The False Discovery Rate (FDR) framework, which accounts for the percentage of false discoveries (the ratio of Ho rejections when Ho is true to the total number of Ho rejections), provides a rationale for the BY correction. In summary, only the p -values that, after the adjustment, yield an expected FDR less than or equal to the intended confidence level remain. Adjusted p -values under BY can take a value of 1. As is standard, the null hypothesis is rejected when p -values fall below an alpha level (1%, 5%, or 10%), or a predetermined significance threshold.

4. Results [1]

4.1 Inter-industry reversal for value-weighted portfolios

In this subsection, value-weighted portfolios are employed. Specifically, value-weighted industry portfolios for stocks are first constructed based on their market capitalization in $t-1$. Then, industries are value-weighted (based on the industry’s CAP in the previous month) in each portfolio to form five industry reversal portfolios. Every reversal portfolio contains two industries. The study’s methodology is consistent, as both stocks and industries are value-weighted (or equally weighted, as shown in one of the robustness checks below).

[Table 1](#) presents the descriptive statistics for the returns of the 24 industry reversal portfolios (P1-P5). Mean returns are mostly negative and range from -1.2% to -0.1% per month. Median returns fluctuate from -1.4% to 0.1% per month. The highest standard deviation occurs for $J = 60, L = 0, K = 3$, whereas the lowest corresponds to $J = 24, L = 0, K = 48$. Skewness is positive and often close to zero, while kurtosis typically exceeds 3, suggesting some departure from normality. The lowest minimum return is observed for the $J = 24, L = 0, K = 6$ window, while the highest minimum return occurs with a $J = 24, L = 0, K = 48$ window. The highest and lowest maximum returns correspond to $J = 60, L = 0, K = 6$ and $J = 24, L = 0, K = 48$, respectively. Percentile 1 varies between -21.2% and -10.1% , while percentile 99 fluctuates from 10.6% to 28.9% .

In [Table 2](#), the mean returns for loser (P1) industry portfolios range from -0.6% to 0.3% . For winner portfolios (P5), returns fluctuate between 0.0% and 0.9% . In the penultimate column, mean returns for a long-short portfolio are mostly negative, albeit insignificant, when adjusted for MHT to rule out data snooping. A few alphas for a P1-P5 portfolio are positive, pointing to some long-term reversal in industry returns. However, none of the risk-adjusted spreads were statistically significant. When the MHT adjustment is omitted (using a significance level of 5% or better), unbalanced results indicate that only three P1-P5 mean returns are significant (and negative). No risk-adjusted spread and, however, is statistically significant (at 5% or better). In general, no evidence is found of long-term industry reversal in either mean or abnormal returns when using value-weighted portfolios.

Three robustness tests (not reported to save space) were conducted to examine the study’s baseline results, which indicate a lack of industry reversal in Latin America. These methodological checks echo the notion of an absent industry reversal effect. First, equal-weighting is used instead of value-weighting, and it is found that none of the spreads (P1-P5) in mean or risk-adjusted returns are statistically significant (after adjusting for MHT). Second, in Latin America, two distinct sub-regional markets exist: Brazil (BM&F BOVESPA) and the Latin American Integrated Market (MILA), which comprises the stock markets of Chile, Colombia, Mexico and Peru. The research findings for Brazil and the MILA are reexamined individually to draw more robust conclusions about the absence of industry reversal in the region. In summary, when Brazilian industries or industries from MILA countries are used (together with the different formation, lag and holding periods employed), it is found that industry reversal is not present in these two sub-regional markets. Third, the study sample was

Table 1. Descriptive statistics of 24 industry reversal portfolios

	Mean	Median	SD	Skew	Kurt	Min	Max	1%	99%
J = 24, L = 0, K = 3	-0.012	-0.014	0.088	0.782	3.350	-0.300	0.407	-0.202	0.283
J = 24, L = 0, K = 6	-0.008	-0.008	0.077	0.471	4.890	-0.316	0.401	-0.195	0.213
J = 24, L = 0, K = 12	-0.006	-0.006	0.070	0.428	4.380	-0.288	0.366	-0.171	0.165
J = 24, L = 0, K = 24	-0.004	-0.005	0.055	1.100	5.340	-0.166	0.322	-0.137	0.147
J = 24, L = 0, K = 36	-0.003	-0.004	0.047	1.690	10.90	-0.139	0.335	-0.104	0.117
J = 24, L = 0, K = 48	-0.005	-0.005	0.045	1.320	8.510	-0.118	0.299	-0.101	0.106
J = 36, L = 0, K = 3	-0.001	-0.005	0.082	1.030	3.440	-0.199	0.376	-0.175	0.272
J = 36, L = 0, K = 6	-0.000	-0.005	0.072	1.090	3.680	-0.179	0.352	-0.161	0.253
J = 36, L = 0, K = 12	-0.002	-0.004	0.066	0.897	2.690	-0.158	0.309	-0.150	0.200
J = 36, L = 0, K = 24	-0.002	-0.003	0.054	1.030	5.210	-0.167	0.323	-0.123	0.135
J = 36, L = 0, K = 36	-0.002	-0.003	0.050	1.370	8.800	-0.153	0.341	-0.105	0.109
J = 36, L = 0, K = 48	-0.004	-0.002	0.047	1.140	7.740	-0.160	0.307	-0.107	0.117
J = 48, L = 0, K = 3	-0.009	-0.01	0.085	0.406	1.660	-0.260	0.348	-0.197	0.235
J = 48, L = 0, K = 6	-0.007	-0.004	0.079	0.555	2.720	-0.260	0.347	-0.201	0.237
J = 48, L = 0, K = 12	-0.007	-0.003	0.072	0.721	2.750	-0.195	0.353	-0.162	0.186
J = 48, L = 0, K = 24	-0.006	-0.003	0.061	0.703	5.170	-0.195	0.355	-0.157	0.138
J = 48, L = 0, K = 36	-0.007	-0.004	0.057	0.906	7.960	-0.195	0.363	-0.156	0.122
J = 48, L = 0, K = 48	-0.008	-0.001	0.056	0.774	8.100	-0.197	0.347	-0.156	0.122
J = 60, L = 0, K = 3	-0.003	-0.001	0.094	1.270	7.090	-0.316	0.536	-0.212	0.267
J = 60, L = 0, K = 6	-0.000	-0.001	0.086	1.960	10.40	-0.258	0.566	-0.166	0.289
J = 60, L = 0, K = 12	-0.001	-0.002	0.073	1.280	6.290	-0.236	0.399	-0.162	0.271
J = 60, L = 0, K = 24	-0.005	-0.001	0.055	0.882	6.820	-0.180	0.308	-0.156	0.139
J = 60, L = 0, K = 36	-0.006	-0.006	0.051	1.240	9.010	-0.179	0.321	-0.141	0.148
J = 60, L = 0, K = 48	-0.005	-0.004	0.049	1.170	8.970	-0.181	0.309	-0.136	0.148

Note(s): This table presents descriptive statistics of monthly returns in US dollars of low-minus-high (or portfolio 1 minus portfolio 5, P1-P5) industry reversal portfolios. The letters *J*, *L* and *K* represent the length (in months) of the formation, lag, and holding period, respectively. The table reports mean, median, SD (standard deviation), skew (skewness), kurt (kurtosis), min (minimum) and max (maximum) of monthly returns. The final two columns display 1 and 99% percentiles

Source(s): Authors' own calculations

divided, in relation to the 2008 global financial crisis, into two subsamples: the pre-crisis periods from July 2001 to August 2008, and the crisis and post-crisis periods from September 2008 (Lehman Brothers filed for bankruptcy on September 15, 2008) to December 2019. Industry reversal remains statistically insignificant in both subsamples.

4.2 Inter-industry reversal and industry size

This subsection explores whether industries with small and large capitalizations display long-term return reversals. In the region, less traditional and smaller industries, such as technology and telecommunications, and more traditional and larger industries, like consumer staples and finance, may exhibit industry reversal differently. For example, smaller industries may be more susceptible to market inefficiencies and higher short-selling barriers (or costs) than larger industries, potentially leading to reversal.

An industry with a CAP below the median industry CAP during each sorting period is classified as a small-capitalization industry. Conversely, industries whose market capitalization exceeds the median industry CAP during each formation period are categorized as large-capitalization industries. Subsequently, five reversal portfolios (each consisting of one industry) are constructed for small and large industries, respectively, and the assumption that loser industries outperform winner industries in these two market industry capitalization segments is tested.

After adjusting for MHT, Table 3 reveals that for small industries, none of the mean returns for the P1, P2 . . . P5 portfolios were significantly different from zero. Most of the P1-P5 mean

Table 2. Raw and risk-adjusted returns of value-weighted industry reversal portfolios

	P1	P2	P3	P4	P5	P1-P5	$\alpha(P1-P5)$
J = 24, L = 0, K = 3	-0.003 [1.000]	0.003 [1.000]	0.008 [1.000]	0.010 [1.000]	0.009 [1.000]	-0.011 [1.000]	-0.011 [1.000]
J = 24, L = 0, K = 6	-0.001 [1.000]	0.004 [1.000]	0.006 [1.000]	0.010 [1.000]	0.007 [1.000]	-0.008 [1.000]	-0.008 [1.000]
J = 24, L = 0, K = 12	0.001 [1.000]	0.002 [1.000]	0.008 [1.000]	0.008 [1.000]	0.007 [1.000]	-0.006 [1.000]	-0.005 [1.000]
J = 24, L = 0, K = 24	0.003 [1.000]	0.000 [1.000]	0.009 [1.000]	0.007 [1.000]	0.006 [1.000]	-0.004 [1.000]	-0.002 [1.000]
J = 24, L = 0, K = 36	0.001 [1.000]	-0.001 [1.000]	0.004 [1.000]	0.007 [1.000]	0.004 [1.000]	-0.003 [1.000]	-0.002 [1.000]
J = 24, L = 0, K = 48	-0.003 [1.000]	-0.003 [1.000]	0.002 [1.000]	0.004 [1.000]	0.002 [1.000]	-0.005 [1.000]	-0.004 [1.000]
J = 36, L = 0, K = 3	0.003 [1.000]	-0.004 [1.000]	0.001 [1.000]	0.011 [1.000]	0.003 [1.000]	-0.000 [1.000]	0.002 [1.000]
J = 36, L = 0, K = 6	0.002 [1.000]	-0.003 [1.000]	0.004 [1.000]	0.009 [1.000]	0.001 [1.000]	0.000 [1.000]	0.001 [1.000]
J = 36, L = 0, K = 12	0.000 [1.000]	-0.002 [1.000]	0.004 [1.000]	0.009 [1.000]	0.003 [1.000]	-0.003 [1.000]	-0.001 [1.000]
J = 36, L = 0, K = 24	-0.000 [1.000]	-0.002 [1.000]	0.005 [1.000]	0.009 [1.000]	0.002 [1.000]	-0.002 [1.000]	-0.000 [1.000]
J = 36, L = 0, K = 36	0.000 [1.000]	-0.000 [1.000]	0.004 [1.000]	0.007 [1.000]	0.003 [1.000]	-0.002 [1.000]	-0.000 [1.000]
J = 36, L = 0, K = 48	-0.003 [1.000]	-0.004 [1.000]	0.002 [1.000]	0.006 [1.000]	0.002 [1.000]	-0.005 [1.000]	-0.002 [1.000]
J = 48, L = 0, K = 3	-0.006 [1.000]	0.000 [1.000]	0.005 [1.000]	0.004 [1.000]	0.003 [1.000]	-0.010 [1.000]	-0.005 [1.000]
J = 48, L = 0, K = 6	-0.005 [1.000]	-0.000 [1.000]	0.004 [1.000]	0.004 [1.000]	0.002 [1.000]	-0.007 [1.000]	-0.004 [1.000]
J = 48, L = 0, K = 12	-0.005 [1.000]	-0.003 [1.000]	0.003 [1.000]	0.004 [1.000]	0.002 [1.000]	-0.007 [1.000]	-0.005 [1.000]
J = 48, L = 0, K = 24	-0.004 [1.000]	-0.002 [1.000]	0.002 [1.000]	0.005 [1.000]	0.002 [1.000]	-0.006 [1.000]	-0.003 [1.000]
J = 48, L = 0, K = 36	-0.004 [1.000]	-0.002 [1.000]	0.001 [1.000]	0.004 [1.000]	0.003 [1.000]	-0.007 [1.000]	-0.005 [1.000]
J = 48, L = 0, K = 48	-0.004 [1.000]	-0.002 [1.000]	0.000 [1.000]	0.004 [1.000]	0.004 [1.000]	-0.008 [1.000]	-0.005 [1.000]
J = 60, L = 0, K = 3	-0.001 [1.000]	-0.007 [1.000]	0.001 [1.000]	0.005 [1.000]	0.003 [1.000]	-0.003 [1.000]	-0.001 [1.000]
J = 60, L = 0, K = 6	0.001 [1.000]	-0.006 [1.000]	0.001 [1.000]	0.003 [1.000]	0.000 [1.000]	0.000 [1.000]	0.002 [1.000]
J = 60, L = 0, K = 12	-0.001 [1.000]	-0.006 [1.000]	0.001 [1.000]	0.004 [1.000]	-0.000 [1.000]	-0.001 [1.000]	0.002 [1.000]
J = 60, L = 0, K = 24	-0.003 [1.000]	-0.006 [1.000]	0.000 [1.000]	0.004 [1.000]	0.001 [1.000]	-0.005 [1.000]	-0.003 [1.000]
J = 60, L = 0, K = 36	-0.004 [1.000]	-0.005 [1.000]	-0.000 [1.000]	0.003 [1.000]	0.002 [1.000]	-0.006 [1.000]	-0.004 [1.000]
J = 60, L = 0, K = 48	-0.003 [1.000]	-0.006 [1.000]	-0.000 [1.000]	0.003 [1.000]	0.002 [1.000]	-0.005 [1.000]	-0.004 [1.000]

Note(s): The first five columns of the table report mean monthly returns in US dollars of five industry reversal portfolios (P1, . . . , P5) using the whole sample of stocks and the set of ten industries. P1 (Portfolio 1) represents the “low” or bottom-quintile of past returns portfolio, whereas P5 indicates the “high” or upper-quintile portfolio. The second to last column (P1-P5) show mean returns for low-minus-high industry reversal portfolios. The last column ($\alpha(P1-P5)$) displays alphas or risk-adjusted returns for low-minus-high industry reversal portfolios using the five-factor model proposed by [Fama and French \(2015\)](#). The letters *J*, *L* and *K* denote the length (in months) of the formation, lag and holding period, respectively. First, *p*-values (in brackets below estimates) are calculated using [Newey and West \(1987\)](#) standard errors. Then, each column is adjusted for MHT (multiple hypothesis testing) employing a False Discovery Rate approach following [Benjamini and Yekutieli \(2001\)](#). Statistical significance is indicated by ***, ** and * at the 0.05, 0.01 and 0.10 levels, respectively

Source(s): Authors’ own calculations

Table 3. Raw and risk-adjusted returns of value-weighted reversal portfolios of small industries

	P1	P2	P3	P4	P5	P1-P5	$\alpha(P1-P5)$
J = 24, L = 0, K = 3	0.010 [1.000]	-0.001 [1.000]	0.003 [1.000]	0.009 [1.000]	0.016 [1.000]	-0.005 [1.000]	-0.004 [1.000]
J = 24, L = 0, K = 6	0.010 [1.000]	0.002 [1.000]	0.007 [1.000]	0.010 [1.000]	0.014 [1.000]	-0.004 [1.000]	-0.003 [1.000]
J = 24, L = 0, K = 12	0.011 [1.000]	0.003 [1.000]	0.006 [1.000]	0.008 [1.000]	0.012 [1.000]	-0.000 [1.000]	-0.005 [1.000]
J = 24, L = 0, K = 24	0.013 [1.000]	0.004 [1.000]	0.008 [1.000]	0.009 [1.000]	0.008 [1.000]	0.005 [1.000]	0.004 [1.000]
J = 24, L = 0, K = 36	0.012 [1.000]	0.001 [1.000]	0.004 [1.000]	0.006 [1.000]	0.003 [1.000]	0.009 [1.000]	0.009 [0.584]
J = 24, L = 0, K = 48	0.006 [1.000]	0.001 [1.000]	-0.002 [1.000]	0.003 [1.000]	-0.001 [1.000]	0.007 [1.000]	0.007 [0.584]
J = 36, L = 0, K = 3	0.003 [1.000]	0.005 [1.000]	0.000 [1.000]	0.009 [1.000]	0.007 [1.000]	-0.004 [1.000]	-0.001 [1.000]
J = 36, L = 0, K = 6	0.002 [1.000]	0.005 [1.000]	0.007 [1.000]	0.008 [1.000]	0.005 [1.000]	-0.003 [1.000]	-0.003 [1.000]
J = 36, L = 0, K = 12	0.003 [1.000]	0.004 [1.000]	0.006 [1.000]	0.007 [1.000]	0.004 [1.000]	-0.000 [1.000]	0.000 [1.000]
J = 36, L = 0, K = 24	0.005 [1.000]	0.004 [1.000]	0.006 [1.000]	0.007 [1.000]	0.001 [1.000]	0.004 [1.000]	0.006 [1.000]
J = 36, L = 0, K = 36	0.006 [1.000]	0.003 [1.000]	0.006 [1.000]	0.008 [1.000]	0.001 [1.000]	0.004 [1.000]	0.008 [0.751]
J = 36, L = 0, K = 48	0.005 [1.000]	0.003 [1.000]	0.001 [1.000]	0.004 [1.000]	-0.004 [1.000]	0.009 [1.000]	0.009 [0.236]
J = 48, L = 0, K = 3	0.004 [1.000]	0.003 [1.000]	0.000 [1.000]	-0.000 [1.000]	0.001 [1.000]	0.003 [1.000]	0.003 [1.000]
J = 48, L = 0, K = 6	0.002 [1.000]	0.003 [1.000]	0.000 [1.000]	0.001 [1.000]	-0.001 [1.000]	0.003 [1.000]	0.004 [1.000]
J = 48, L = 0, K = 12	0.005 [1.000]	0.001 [1.000]	-0.001 [1.000]	0.001 [1.000]	-0.003 [1.000]	0.008 [1.000]	0.009 [0.630]
J = 48, L = 0, K = 24	0.005 [1.000]	0.001 [1.000]	0.001 [1.000]	0.001 [1.000]	-0.004 [1.000]	0.009 [1.000]	0.011 [0.268]
J = 48, L = 0, K = 36	0.004 [1.000]	-0.000 [1.000]	0.001 [1.000]	0.002 [1.000]	-0.003 [1.000]	0.007 [1.000]	0.010 [0.236]
J = 48, L = 0, K = 48	0.004 [1.000]	-0.000 [1.000]	0.000 [1.000]	0.002 [1.000]	-0.002 [1.000]	0.006 [1.000]	0.007 [0.437]
J = 60, L = 0, K = 3	-0.002 [1.000]	0.001 [1.000]	-0.002 [1.000]	0.004 [1.000]	0.002 [1.000]	-0.003 [1.000]	-0.001 [1.000]
J = 60, L = 0, K = 6	-0.001 [1.000]	-0.001 [1.000]	-0.001 [1.000]	-0.002 [1.000]	-0.001 [1.000]	0.000 [1.000]	0.001 [1.000]
J = 60, L = 0, K = 12	-0.000 [1.000]	-0.001 [1.000]	0.000 [1.000]	-0.000 [1.000]	-0.003 [1.000]	0.002 [1.000]	0.005 [1.000]
J = 60, L = 0, K = 24	-0.001 [1.000]	-0.002 [1.000]	0.000 [1.000]	0.000 [1.000]	-0.002 [1.000]	0.001 [1.000]	0.002 [1.000]
J = 60, L = 0, K = 36	-0.000 [1.000]	-0.002 [1.000]	-0.000 [1.000]	-0.000 [1.000]	-0.001 [1.000]	0.001 [1.000]	0.002 [1.000]
J = 60, L = 0, K = 48	-0.001 [1.000]	-0.002 [1.000]	-0.001 [1.000]	-0.001 [1.000]	0.000 [1.000]	-0.001 [1.000]	-0.001 [1.000]

Note(s): The first five columns of the table report mean monthly returns in US dollars of five industry reversal portfolios (P1, . . . , P5) using a subsample of small-cap industries (i.e. industries with a market cap below the median industrial market capitalization of each month). P1 (Portfolio 1) represents the “low” or bottom-quintile of past returns portfolio, whereas P5 indicates the “high” or upper-quintile portfolio. The second to last column (P1-P5) show mean returns for low-minus-high industry reversal portfolios. The last column ($\alpha(P1-P5)$) displays alphas or risk-adjusted returns for low-minus-high industry reversal portfolios using the five-factor model proposed by [Fama and French \(2015\)](#). The letters *J*, *L* and *K* denote the length (in months) of the formation, lag and holding period, respectively. First, *p*-values (in brackets below estimates) are calculated using [Newey and West \(1987\)](#) standard errors. Then, each column is adjusted for MHT (multiple hypothesis testing) employing a False Discovery Rate approach following [Benjamini and Yekutieli \(2001\)](#). Statistical significance is indicated by ***, ** and * at the 0.05, 0.01 and 0.10 levels, respectively

Source(s): Authors’ own calculations

spreads were positive but statistically insignificant. The largest spreads tend to occur with $J = 48$ and $L = 0$. Alphas for the P1-P5 portfolios are close to zero and not statistically significant, fluctuating from -0.5% to 1.1% . If no adjustment is made for MHT and a 5% significance level (or better) is applied, only four positive and significant spreads in mean returns and sixteen significant spreads in risk-adjusted returns are observed (in an unreported result). In summary, evidence of return reversal among small industries in Latin America is limited.

When large-cap industries, as reported in [Table 4](#), are considered, it is noted that P1 mean returns range from -0.7% to 0.2% , while the returns of the winner portfolios range from -0.1% to 0.8% . Nevertheless, the mean returns for both P1 and P5 portfolios are not statistically significant. P1-P5 delivered a mostly negative (although insignificant) mean return, a finding consistent with momentum rather than reversal. Alphas tend to be negative except for $J = 60$ and $L = 0$. However, and again, risk-adjusted return spreads are not statistically significant. Evidence from [Table 4](#) leads to the conclusion that return reversal is non-existent among large-cap industries.

4.3 Intra-industry reversal

In the previous two subsections, reversal between (or across) ten industries was discussed. In this subsection, long-term reversal within each industry is examined. Because the energy, technology, health care and telecommunications industries do not have sufficient stocks to create adequately diversified portfolios, they are excluded from this analysis. The study concentrates on six industries and creates two portfolios using the loser and winner stocks from those industries. The analysis focuses on a formation and holding period of three years, with no gap. However, qualitatively comparable results are obtained using alternative combinations of J , K and L . Furthermore, instead of adjusting the p -values for MHT using BY, now the [Holm \(1979\)](#) adjustment is used, as the number of hypotheses is lower (6 instead of 24 as in the previous subsection). The Holm adjustment fits into the Family-Wise Error Rate (FWER) framework. The likelihood of making a single Type I error, or rejecting a true null hypothesis, when performing one or more tests concurrently is known as the false positive error rate, or FWER. As is customary, the null hypothesis is rejected if the adjusted probability (p -value) is below the significance level (α).

The first column of [Table 5](#) reveals that the loser portfolio of financial stocks has the lowest mean return (-0.5%), while the loser portfolio of consumer staples stocks shows the highest mean return (1.6%). Nonetheless, for most of the six industries analyzed, P1 exhibits a mean return statistically different from zero. A winner portfolio of basic materials (among the six P2 portfolios) records the lowest mean, and a winner portfolio of utilities yields the highest mean. P1-P2 mean returns are slightly negative for four out of six sectors, while for two industries, the spreads are positive. Importantly, none of the P1-P2 mean returns are significant (at 5% or better), indicating a lack of intra-industry reversal. A similar pattern (to the penultimate column) is observed when the focus is on alphas. In the last column of [Table 5](#), four out of six alphas are negative, and most alphas are non-significant (except in the financial industry). Together, these results reaffirm the absence of long-term intra-industry reversal in Latin America.

In an unreported robustness check, no evidence of intra-industry reversal in the study sample of six industries is found, even when using p -values unadjusted for MHT. Overall, no evidence that a contrarian strategy is profitable in any of the six industries analyzed is observed, thus implying an absence of intra-industry reversal in the region.

4.4 Intra-industry reversal and industry size

In this subsection, the interaction between long-term intra-industry reversal and stock size is examined. The study analyzes whether a contrarian strategy (within each of the six industries) is profitable using a sample of either small or large stocks. A stock with a CAP below the

Table 4. Raw and risk-adjusted returns of value-weighted reversal portfolios of large industries

	P1	P2	P3	P4	P5	P1-P5	$\alpha(P1-P5)$
J = 24, L = 0, K = 3	0.001 [1.000]	-0.000 [1.000]	0.004 [1.000]	0.010 [1.000]	0.008 [1.000]	-0.007 [1.000]	-0.004 [1.000]
J = 24, L = 0, K = 6	0.002 [1.000]	0.000 [1.000]	0.005 [1.000]	0.007 [1.000]	0.007 [1.000]	-0.006 [1.000]	-0.005 [1.000]
J = 24, L = 0, K = 12	0.000 [1.000]	0.001 [1.000]	0.003 [1.000]	0.008 [1.000]	0.006 [1.000]	-0.006 [1.000]	-0.004 [1.000]
J = 24, L = 0, K = 24	0.001 [1.000]	-0.000 [1.000]	0.003 [1.000]	0.008 [1.000]	0.006 [1.000]	-0.006 [1.000]	-0.003 [1.000]
J = 24, L = 0, K = 36	-0.000 [1.000]	-0.001 [1.000]	0.001 [1.000]	0.005 [1.000]	0.005 [1.000]	-0.005 [1.000]	-0.004 [1.000]
J = 24, L = 0, K = 48	-0.003 [1.000]	-0.004 [1.000]	-0.000 [1.000]	0.004 [1.000]	0.004 [1.000]	-0.006 [1.000]	-0.006 [1.000]
J = 36, L = 0, K = 3	0.001 [1.000]	-0.000 [1.000]	-0.001 [1.000]	0.009 [1.000]	0.002 [1.000]	-0.001 [1.000]	-0.003 [1.000]
J = 36, L = 0, K = 6	0.000 [1.000]	-0.001 [1.000]	0.002 [1.000]	0.007 [1.000]	0.002 [1.000]	-0.002 [1.000]	-0.006 [1.000]
J = 36, L = 0, K = 12	-0.002 [1.000]	-0.001 [1.000]	-0.000 [1.000]	0.006 [1.000]	0.005 [1.000]	-0.007 [1.000]	-0.006 [1.000]
J = 36, L = 0, K = 24	-0.003 [1.000]	-0.003 [1.000]	0.001 [1.000]	0.006 [1.000]	0.004 [1.000]	-0.007 [1.000]	-0.009 [1.000]
J = 36, L = 0, K = 36	-0.002 [1.000]	-0.001 [1.000]	0.001 [1.000]	0.005 [1.000]	0.004 [1.000]	-0.006 [1.000]	-0.006 [1.000]
J = 36, L = 0, K = 48	-0.003 [1.000]	-0.003 [1.000]	-0.001 [1.000]	0.004 [1.000]	0.003 [1.000]	-0.006 [1.000]	-0.006 [1.000]
J = 48, L = 0, K = 3	-0.007 [1.000]	-0.005 [1.000]	0.002 [1.000]	0.009 [1.000]	0.003 [1.000]	-0.010 [1.000]	-0.007 [1.000]
J = 48, L = 0, K = 6	-0.002 [1.000]	-0.006 [1.000]	0.000 [1.000]	0.009 [1.000]	0.001 [1.000]	-0.004 [1.000]	-0.003 [1.000]
J = 48, L = 0, K = 12	-0.004 [1.000]	-0.004 [1.000]	-0.000 [1.000]	0.005 [1.000]	0.002 [1.000]	-0.006 [1.000]	-0.001 [1.000]
J = 48, L = 0, K = 24	-0.004 [1.000]	-0.004 [1.000]	-0.000 [1.000]	0.003 [1.000]	0.003 [1.000]	-0.007 [1.000]	-0.002 [1.000]
J = 48, L = 0, K = 36	-0.002 [1.000]	-0.004 [1.000]	-0.001 [1.000]	0.003 [1.000]	0.004 [1.000]	-0.006 [1.000]	-0.002 [1.000]
J = 48, L = 0, K = 48	-0.002 [1.000]	-0.004 [1.000]	-0.002 [1.000]	0.003 [1.000]	0.004 [1.000]	-0.006 [1.000]	-0.002 [1.000]
J = 60, L = 0, K = 3	-0.001 [1.000]	-0.008 [1.000]	-0.001 [1.000]	0.008 [1.000]	0.000 [1.000]	-0.001 [1.000]	0.003 [1.000]
J = 60, L = 0, K = 6	0.002 [1.000]	-0.006 [1.000]	-0.004 [1.000]	0.005 [1.000]	-0.001 [1.000]	0.003 [1.000]	0.005 [1.000]
J = 60, L = 0, K = 12	-0.002 [1.000]	-0.003 [1.000]	-0.004 [1.000]	0.004 [1.000]	-0.001 [1.000]	-0.001 [1.000]	0.002 [1.000]
J = 60, L = 0, K = 24	-0.003 [1.000]	-0.005 [1.000]	-0.002 [1.000]	0.004 [1.000]	-0.001 [1.000]	-0.002 [1.000]	0.001 [1.000]
J = 60, L = 0, K = 36	-0.002 [1.000]	-0.005 [1.000]	-0.003 [1.000]	0.003 [1.000]	0.001 [1.000]	-0.003 [1.000]	0.001 [1.000]
J = 60, L = 0, K = 48	-0.001 [1.000]	-0.005 [1.000]	-0.004 [1.000]	0.002 [1.000]	0.002 [1.000]	-0.002 [1.000]	0.001 [1.000]

Note(s): The first five columns of the table report mean monthly returns in US dollars of five industry reversal portfolios (P1, . . . , P5) using a subsample of large-cap industries (i.e. industries with a market cap above the median industrial market capitalization of each month). P1 (Portfolio 1) represents the “low” or bottom-quintile of past returns portfolio, whereas P5 indicates the “high” or upper-quintile portfolio. The second to last column (P1-P5) show mean returns for low-minus-high industry reversal portfolios. The last column ($\alpha(P1-P5)$) displays alphas or risk-adjusted returns for low-minus-high industry reversal portfolios using the five-factor model proposed by [Fama and French \(2015\)](#). The letters *J*, *L* and *K* denote the length (in months) of the formation, lag and holding period, respectively. First, *p*-values (in brackets below estimates) are calculated using [Newey and West \(1987\)](#) standard errors. Then, each column is adjusted for MHT (multiple hypothesis testing) employing a False Discovery Rate approach following [Benjamini and Yekutieli \(2001\)](#). Statistical significance is indicated by ***, ** and * at the 0.05, 0.01 and 0.10 levels, respectively

Source(s): Authors’ own calculations

Table 5. Intra-industry reversal raw and risk-adjusted returns

Industry	P1	P2	P1-P2	α (P1-P2)
Basic materials	0.009 [0.464]	0.006 [0.342]	0.003 [1.000]	0.004 [1.000]
Consumer discretionary	0.000 [0.979]	0.007 [0.231]	-0.007 [1.000]	-0.010 [0.894]
Consumer staples	0.016* [0.055]	0.011 [0.231]	0.004 [1.000]	0.005 [0.894]
Financials	-0.005 [0.903]	0.007 [0.328]	-0.013* [0.088]	-0.013** [0.032]
Industrials	0.008 [0.647]	0.010 [0.208]	-0.003 [1.000]	-0.001 [1.000]
Utilities	0.008 [0.464]	0.016** [0.037]	-0.008 [0.695]	-0.004 [1.000]

Note(s): This table reports mean returns and, in the last column, five-factor alphas, or risk-adjusted monthly returns in US dollars. The letters *J*, *L* and *K* represent the length (in months) of the formation, lag and holding period, respectively. $J = K = 36$ and $L = 0$ are set. P1 (Portfolio 1) includes “loser” stocks and P2 “winner” stocks for each industry. Column P1-P2 estimates average returns for a long-short within-industry reversal portfolio. *p*-values for two-sided tests of zero alpha (or mean return) computed using the standard errors by Newey and West (1987) and adjusted following Holm (1979) for multiple hypothesis testing (in each column), are reported in brackets below the study estimates. Statistical significance is indicated by ***, ** and * at the 0.05, 0.01 and 0.10 levels, respectively

Source(s): Authors’ own calculations

median industry CAP (its corresponding industry) during each sorting period is classified as a small stock. Conversely, a stock is considered large if its market capitalization exceeds the median industry CAP in each formation period.

Only considering small stocks, Table 6 reveals that a loser portfolio of industrial stocks has the lowest mean return, while a loser portfolio comprising financial stocks has the highest mean return. Winner industry portfolios of small stocks in the financials and consumer staple sectors show the highest mean returns. As for the spread, P1-P2 is positive for three industries: financials, industrials and utilities. For the remaining three industries, the P1-P2 spread is negative. Nonetheless, the P1-P2 spreads are statistically insignificant for all six industries considered. Risk-adjusted spread results mirror those in the penultimate column: only two spreads are positive, but none of the six spreads is significant. In sum, for the small stock segment of industry portfolios, no empirical evidence exists supporting intra-industry reversal.

Table 7 reveals that when using only large stocks to construct industry portfolios, loser portfolios have mean returns ranging from -0.6% to 1.2%. None of the mean returns was statistically significant. For winner stocks, P2 records mean returns that range between 0.6% (financials) and 1.5% (utilities). For the six industries, none of the P2 mean returns are significant. Basic materials and consumer staples display a positive P1-P2 spread, while the remaining four industries exhibit a negative one. After adjusting for MHT, none of the P1-P2 mean returns proved significant. In the last column, alphas range from -1.2% to 0.6% and are not statistically significant (except for the financial industry, which shows a negative alpha consistent with momentum). In general, both raw and risk-adjusted results confirm that intra-industry reversal is absent in the large-stock segment.

5. Conclusions

5.1 Theoretical and managerial implications

The existence of long-term return reversal is examined using a set of Latin American industry portfolios. The study analyzes 24 strategies with different formation and holding windows and

Table 6. Intra-industry reversal raw and risk-adjusted returns using a sample of small stocks

Industry	P1	P2	P1-P2	$\alpha(P1-P2)$
Basic Materials	0.001 [0.891]	0.004 [0.448]	-0.004 [1.000]	-0.004 [1.000]
Consumer Discretionary	0.006 [0.576]	0.009 [0.257]	-0.003 [1.000]	-0.007 [0.562]
Consumer Staples	0.011 [0.264]	0.012 [0.125]	-0.001 [1.000]	-0.002 [1.000]
Financials	0.013 [0.110]	0.012 [0.125]	0.001 [1.000]	-0.001 [1.000]
Industrials	0.008 [0.355]	0.006 [0.393]	0.002 [1.000]	0.001 [1.000]
Utilities	0.012 [0.110]	0.010 [0.257]	0.002 [1.000]	0.001 [1.000]

Note(s): This table reports mean returns and, in the last column, five-factor alphas, or risk-adjusted monthly returns in US dollars, using a subsample of small-cap stocks (i.e. stocks with a market cap below the median market capitalization of each month). The letters J , L and K represent the length (in months) of the formation, lag and holding period, respectively. $J = K = 36$ and $L = 0$ are set. P1 (Portfolio 1) includes “loser” stocks and P2 “winner” stocks for each industry. Column P1-P2 estimates average returns for a long-short within-industry reversal portfolio. p -values for two-sided tests of zero alpha (or mean return) computed using the standard errors by Newey and West (1987) and adjusted following Holm (1979) for multiple hypothesis testing (in each column), are reported in brackets below the study estimates. Statistical significance is indicated by ***, ** and * at the 0.05, 0.01 and 0.10 levels, respectively

Source(s): Authors’ own calculations

Table 7. Intra-industry reversal raw and risk-adjusted returns using a sample of large stocks

Industry	P1	P2	P1-P2	$\alpha(P1-P2)$
Basic materials	0.012 [0.218]	0.008 [0.631]	0.004 [1.000]	0.004 [0.899]
Consumer discretionary	-0.001 [0.865]	0.007 [0.235]	-0.009 [0.772]	-0.010 [0.766]
Consumer staples	0.012 [0.228]	0.008 [0.631]	0.004 [1.000]	0.006 [0.766]
Financials	-0.006 [0.864]	0.006 [0.631]	-0.012 [0.115]	-0.012** [0.048]
Industrials	0.009 [0.548]	0.011 [0.218]	-0.002 [1.000]	-0.002 [0.899]
Utilities	0.008 [0.548]	0.015* [0.082]	-0.007 [0.659]	-0.005 [0.899]

Note(s): This table reports mean returns and, in the last column, five-factor alphas, or risk-adjusted monthly returns in US dollars, using a subsample of large-cap stocks (i.e. stocks with a market cap above the median market capitalization of each month). The letters J , L and K represent the length (in months) of the formation, lag and holding period, respectively. $J = K = 36$ and $L = 0$ are set. P1 (Portfolio 1) includes “loser” stocks and P2 “winner” stocks for each industry. Column P1-P2 estimates average returns for a long-short within-industry reversal portfolio. p -values for two-sided tests of zero alpha (or mean return) computed using standard errors by Newey and West (1987) and adjusted following Holm (1979) for multiple hypothesis testing (in each column), are reported in brackets below the study estimates. Statistical significance is indicated by ***, ** and * at the 0.05, 0.01 and 0.10 levels, respectively

Source(s): Authors’ own calculations

examines whether a contrarian strategy is profitable. If a reversal occurs, (historically) losing industries should outperform winning industries, especially in the long term. No evidence of return reversal across industries is found. After conducting a series of robustness tests, the absence of inter-industry return reversal is reaffirmed.

Even though reversal might not appear in the overall market, it could still manifest within specific market segments, for example, related to industry size. It could be argued that smaller industries are more prone to market inefficiencies, liquidity constraints and tighter short-selling constraints, all of which might lead to return reversal. However, the research findings report no significant reversal effects in either small or large industries.

The issue of intra-industry reversal is then analyzed to determine whether loser stocks outperform winner stocks in each industry of the sample, particularly over the long term. In general, no significant reversal effect is found for any of the industries. As with the inter-industry segment analysis, reversal is also tested within each industry by separating small and large stocks. For both market segments defined by stock size, no significant reversal effect emerges. Overall, investors in Latin American industries would have been unable to profit from exploiting return reversion across and within industries, a finding consistent with weak-form market efficiency in the region.

5.2 Limitations and future research

The study focuses on formation periods of up to five years and holding periods of up to a year, as constrained by data availability. This limitation restricts the range of reversal strategies that can be analyzed (e.g. formation periods of a decade are not considered). As additional data become available, this limitation will be less severe. Future research could extend this analysis by examining inter- and intra-industry long-term reversal, not only across size segments but also across other industry segments (or characteristics) such as idiosyncratic volatility, price, asset levels and industry concentration.

Note

1. This section presents the results and a discussion of our findings.

References

- Apergis, N., Plakandaras, V. and Pragidis, I. (2020), "Industry momentum and reversals in stock markets", *International Journal of Finance and Economics*, Vol. 27 No. 3, pp. 3093-3138, doi: [10.1002/ijfe.2314](https://doi.org/10.1002/ijfe.2314).
- Bali, T.G., Subrahmanyam, A. and Wen, Q. (2021), "Long-term reversals in the corporate bond market", *Journal of Financial Economics*, Vol. 139 No. 2, pp. 656-677, doi: [10.1016/j.jfineco.2020.08.007](https://doi.org/10.1016/j.jfineco.2020.08.007).
- Benjamini, Y. and Yekutieli, D. (2001), "The control of the false discovery rate in multiple testing under dependency", *The Annals of Statistics*, Vol. 29 No. 4, pp. 1165-1188, doi: [10.1214/aos/1013699998](https://doi.org/10.1214/aos/1013699998).
- Berggrun, L., Cardona, E. and Lizarzaburu, E. (2020), "Profitability of momentum strategies in Latin America", *International Review of Financial Analysis*, Vol. 70, 101502, doi: [10.1016/j.irfa.2020.101502](https://doi.org/10.1016/j.irfa.2020.101502).
- Berggrun, L., Cardona, E. and Lizarzaburu, E. (2023), "Industry momentum in Latin America", *Journal of Business Research*, Vol. 158, 113711, doi: [10.1016/j.jbusres.2023.113711](https://doi.org/10.1016/j.jbusres.2023.113711).
- Bildik, R. and Gulay, G. (2007), "Profitability of contrarian strategies: evidence from the Istanbul stock exchange", *International Review of Finance*, Vol. 7 Nos 1-2, pp. 61-87, doi: [10.1111/j.1468-2443.2007.00068.x](https://doi.org/10.1111/j.1468-2443.2007.00068.x).
- Bornholt, G., Gharaibeh, O. and Malin, M. (2015), "Industry long-term return reversal", *Journal of International Financial Markets, Institutions and Money*, Vol. 38, pp. 65-78, doi: [10.1016/j.intfin.2015.05.013](https://doi.org/10.1016/j.intfin.2015.05.013).

- Day, M.-Y. and Ni, Y. (2023), "Do clean energy indices outperform using contrarian strategies based on contrarian trading rules?", *Energy*, Vol. 272, 127113, doi: [10.1016/j.energy.2023.127113](https://doi.org/10.1016/j.energy.2023.127113).
- Fama, E.F. and French, K.R. (2015), "A five-factor asset pricing model", *Journal of Financial Economics*, Vol. 116, pp. 1-22, doi: [10.1016/j.jfineco.2014.10.010](https://doi.org/10.1016/j.jfineco.2014.10.010).
- Galariotis, E.C. (2012), "Recent evidence on the performance and riskiness of contrarian portfolios", *The European Journal of Finance*, Vol. 18 No. 7, pp. 603-617, doi: [10.1080/1351847X.2011.628795](https://doi.org/10.1080/1351847X.2011.628795).
- Gang, J., Qian, Z. and Xu, T. (2019), "Investment horizons, cash flow news, and the profitability of momentum and reversal strategies in the Chinese stock market", *Economic Modelling*, Vol. 83, pp. 364-371, doi: [10.1016/j.econmod.2019.08.021](https://doi.org/10.1016/j.econmod.2019.08.021).
- Holm, S. (1979), "A simple sequentially rejective multiple test procedure", *Scandinavian Journal of Statistics*, Vol. 6, pp. 65-70, doi: [10.2307/4615733](https://doi.org/10.2307/4615733).
- Jegadeesh, N. and Titman, S. (1993), "Returns to buying winners and selling losers: implications for stock market efficiency", *The Journal of Finance*, Vol. 48 No. 1, pp. 65-91, doi: [10.1111/j.1540-6261.1993.tb04702.x](https://doi.org/10.1111/j.1540-6261.1993.tb04702.x).
- Kosc, K., Sakowski, P. and Ślepaczuk, R. (2019), "Momentum and contrarian effects on the cryptocurrency market", *Physica A: Statistical Mechanics and its Applications*, Vol. 523, pp. 691-701, doi: [10.1016/j.physa.2019.02.057](https://doi.org/10.1016/j.physa.2019.02.057).
- Newey, W.K. and West, K.D. (1987), "A simple, positive semi-definite, heteroskedasticity and autocorrelation consistent covariance matrix", *Econometrica*, Vol. 55 No. 3, pp. 703-708, doi: [10.2307/1913610](https://doi.org/10.2307/1913610).
- Ramiah, V., Cheng, K.Y., Orriols, J., Naughton, T. and Hallahan, T. (2011), "Contrarian investment strategies work better for dually-traded stocks: evidence from Hong Kong", *Pacific-Basin Finance Journal*, Vol. 19 No. 1, pp. 140-156, doi: [10.1016/j.pacfin.2010.09.005](https://doi.org/10.1016/j.pacfin.2010.09.005).
- Schiereck, D., De Bondt, W. and Weber, M. (1999), "Contrarian and momentum strategies in Germany", *Financial Analysts Journal*, Vol. 55 No. 6, pp. 104-116, doi: [10.2469/faj.v55.n6.2317](https://doi.org/10.2469/faj.v55.n6.2317).
- Shi, H.-L. and Zhou, W.-X. (2017), "Wax and wane of the cross-sectional momentum and contrarian effects: evidence from the Chinese stock markets", *Physica A: Statistical Mechanics and its Applications*, Vol. 486, pp. 397-407, doi: [10.1016/j.physa.2017.05.078](https://doi.org/10.1016/j.physa.2017.05.078).
- Wu, Y. and Mazouz, K. (2016), "Long-term industry reversals", *Journal of Banking and Finance*, Vol. 68, pp. 236-250, doi: [10.1016/j.jbankfin.2016.03.017](https://doi.org/10.1016/j.jbankfin.2016.03.017).
- Wu, Y., Li, Y. and Hamill, P. (2012), "Do low-priced stocks drive long-term contrarian performance on the London Stock Exchange?", *Financial Review*, Vol. 47 No. 3, pp. 501-530, doi: [10.1111/j.1540-6288.2012.00338.x](https://doi.org/10.1111/j.1540-6288.2012.00338.x).
- Zaremba, A., Umutlu, M. and Maydybura, A. (2020), "Where have the profits gone? Market efficiency and the disappearing equity anomalies in country and industry returns", *Journal of Banking and Finance*, Vol. 121, 105966, doi: [10.1016/j.jbankfin.2020.105966](https://doi.org/10.1016/j.jbankfin.2020.105966).
- Zhang, W., Wang, G., Wang, X., Xiong, X. and Lei, X. (2018), "Profitability of reversal strategies: a modified version of the Carhart model in China", *Economic Modelling*, Vol. 69, pp. 26-37, doi: [10.1016/j.econmod.2017.09.003](https://doi.org/10.1016/j.econmod.2017.09.003).

Further reading

- McLean, R.D. (2010), "Idiosyncratic risk, long-term reversal, and momentum", *The Journal of Financial and Quantitative Analysis*, Vol. 45 No. 4, pp. 883-906, doi: [10.1017/S0022109010000311](https://doi.org/10.1017/S0022109010000311).
- Pontiff, J. (2006), "Costly arbitrage and the myth of idiosyncratic risk", *Journal of Accounting and Economics*, Vol. 42 Nos 1-2, pp. 35-52, doi: [10.1016/j.jacceco.2006.04.002](https://doi.org/10.1016/j.jacceco.2006.04.002).

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