Economics Letters 123 (2014) 100–103

Contents lists available at ScienceDirect

Economics Letters

journal homepage: www.elsevier.com/locate/ecolet

Momentum in global equity markets in times of troubles: Does the economic state matter?☆

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HIGHLIGHTS

- Momentum-based trading strategies in global equity markets were profitable during the 1998–2013 period.
- Momentum strategies generated statistically significant negative returns during the most recent recessions.
- Negative momentum payoffs are generated in the wake of market reversals following severe market declines.

ARTICLE INFO

Article history:
Received 4 December 2013
Received in revised form
20 January 2014
Accepted 26 January 2014
Available online 3 February 2014

JEL classification:
G12
G14

Keywords:
Momentum
Global equity markets
International stock indices
Business cycle

ABSTRACT

This paper investigates the profitability of momentum-based trading strategies pursued during the most recent economic downturns in global equity markets. In contrast to previous studies, it reveals that such strategies generated statistically significant negative returns during the most recent recessions. These "momentum crashes" happen during market reversals following exceptionally large market declines, as occurred in March and April 2009.

1. Introduction

Few stock market anomalies have received the volume of attention in empirical research matching that of the momentum effect first documented by Jegadeesh and Titman (1993). More than two decades after its initial discovery, reports persist of the ongoing profitability of momentum trading strategies. Novy-Marx (2012) asserted that such strategies based on intermediate past performance generate significantly higher profits than strategies based on recent past performance. However, only a few studies focus on momentum strategies from an international investor's perspective. Rouwenhorst's (1997) empirical study provides evidence that momentum strategies were profitable for equities in 12 European markets and Rouwenhorst (1999) documents that return momentum is present among stocks listed on emerging markets' stock indices. Chan et al. (2000) examined a sample of 23 countries and employed a weighted relative strength strategy (WRSS) that bought stocks in proportion to their returns over the ranking period. Their study confirmed the findings of Rouwenhorst (1999) in the sense that momentum strategies appear to be profitable in a global equity market setting.

Jegadeesh and Titman's (1993) back-testing of momentum indicated that they occasioned enormous losses during market index rebounds in the 1930–1932 period, yet there have been subsequently surprisingly few investigations of the profitability of momentum strategies during economic downturns. While Chordia and Shivakumar (2002) found that momentum payoffs appear to be negative but statistically not different from zero during recessions, Daniel and Moskowitz (2013) showed that the momentum portfolio exhibits a strong up- and down-beta differential in bear markets. This optionality is mostly related to the loser portfolio. More precisely, when market conditions improve, these losers make strong gains which, in turn, results in a "momentum crash".

☆ I wish to thank the anonymous reviewer for useful comments. I am responsible for all errors and omissions.

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http://dx.doi.org/10.1016/j.econlet.2014.01.028
0165-1765/

Table 1
International stock markets.

No.	Country	Stock index	Exchange rate
1	Brazil	BOVESPA Brazil	US $/Brazilian real
2	Mexico	IPC Mexico	US $/Mexican peso
3	Argentina	Merval Argentina	US/$Argentiniane Peso
4	Canada	S&P/TSX Canada	US $/Canadian dollar
5	USA	DJ 30 USA	US dollar
6	Hang Kong	Hang Seng Hong Kong	US $/Hong Kong dollar
7	China	SSE Composite Shanghai China	US $/Chinese Yuan renminbi
8	India	S&P BSE SENSEX India	US $/Indian rupee
9	Indonesia	Composite Index Jakarta Indonesia	US $/Indonesian rupiah
10	Malaysia	FTSE Bursa Malaysia KLCI Malaysia	US $/Malaysian ringgit
11	Japan	NIKKEI 225 Japan	US $/Japanese yen
12	New Zealand	NZX 50 INDEX New Zealand	US $/New Zealand dollar
13	Singapore	STI Index Singapore	US $/Singapore dollar
14	Austria	ATX Austria	US $/Euro*
15	Belgium	EURONEXT BEL-20 Belgium	US $/Euro*
16	France	CAC 40 France	US $/Euro*
17	Germany	DAX 30 Germany	US $/Euro*
18	Netherlands	AEX Netherlands	US $/Euro*
19	Switzerland	SMI Switzerland	US $/Swiss franc
20	UK	FTSE 100 UK	US $/Great British pound
21	Greece	ATHEN INDEX Greece	US $/Euro**

* The EUR exchange rate is accounted for from January 1999. Before January 1999 the following exchange rates for Austria, Belgium, France, Germany and the Netherlands were employed: US dollar/Austrian schilling, US dollar/Belgian franc, US dollar/French franc, US dollar/Deutsch mark and US dollar/Dutch guilder.
** The EUR exchange rate is accounted for from January 2001. Before January 2001, I used the US dollar/Greek drachma exchange rate.

The purpose of this paper is to investigate the profitability of international momentum strategies during the economic downturns since Rouwenhorst's (1997) study. It compares various momentum strategies and where most other studies focus on the US stock market, this study employs a sample of 21 foreign stock indices. Each of these stock indices is a well-diversified basket of foreign stocks that is used in the sorting procedure, where all indices are divided into quartiles based on their cumulative past returns to implement zero-cost portfolios. Since this paper considers the perspective of a US investor, the S&P 500 is employed for risk-adjustment.

The study contributes to the existing literature in two ways. First, it identifies the profitability of momentum strategies implemented in a global equity market setting during the most recent economic recessions. Second, by extending Novy-Marx's (2012) analysis to a global equity market setting, it assesses whether intermediate past performance offers more beneficial information for internationally aligned investors in the US than recent past performance. This is also important because investment managers operating globally must make top-down decisions on international asset allocation.

The current research diverges from past examples in finding that momentum-based trading strategies in a global equity market setting generate statistically significant negative returns, at least during the most recent recessions, irrespective of whether the strategies are based on intermediate or recent past performance. Even if strategies based on intermediate past performance are market neutral, they appear to have been unprofitable during the recent recessions. This paper is organized as follows: in Section 2 the data is described. Section 3 presents the empirical framework and findings and the last section draws conclusions.

2. Data

I downloaded monthly stock market data from 21 different countries covering the period July 1997–2013 from finance.yahoo.com. Adopting the perspective of a US investor, I adjusted the foreign monthly stock index returns by their exchange rates, downloaded from the European Central Bank and Worldbank's data-base. I also downloaded data from National Bureau of Economic Research indicating expansionary and recessionary periods for the USA from July 1998–2013.[1] Data for the monthly US risk-free rate were extracted from Kenneth's French website.[2] Table 1 presents the countries, the corresponding stock indices, and the corresponding exchange rates.

3. Empirical framework

I compounded the monthly gross returns for all foreign stock indices for the period July 1997–2013 and converted foreign stock market returns into US dollars by subtracting the corresponding monthly average exchange rate returns. I used Fama and French's (2008) portfolio approach to run the portfolio sorts for July 1998. I sorted all stock indices by their cumulative past returns in an increasing order into quartiles. The first group (''loser'') contains the 25% of equal-weighted foreign stock indices exhibiting the lowest cumulative returns for the period t-6–t-2, whereas the fourth group (''winner'') contains the 25% of equal-weighted foreign stock indices exhibiting the highest cumulative returns for the same period. Apart from foreign indices, the sorting procedure also incorporates the Dow Jones 30 as the domestic index. Each group forms a well-diversified equity basket containing at least 125 stocks. This strategy was updated and rebalanced at the beginning of each month and dubbed the 6-2 strategy as in Novy-Marx (2012). I also modeled the following strategies: 7-2, 8-3, 9-4, 10-5, 11-6 and 12-7. The zero-cost portfolios were compounded by selling the loser and buying the winner portfolio. The zero-cost portfolios were risk-adjusted by regressing the zero-cost portfolios on the excess returns of the S&P 500 index. The corresponding results are reported in Table 2 Panel A.

Next, I included a dummy variable in the regression with a value of 1 indicating a recessionary period and a value of 0

1 See http://www.nber.org/cycles.html.
2 See http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.