Weekday Seasonality of Chinese Stock Returns: Diametrically Opposite of That Seen Worldwide
Session: Challenges and Opportunities in Emerging Markets and Economies

Fahad Ali [a*] and Numan Ülkü [b]

[a] College of Economics, Zhejiang University, Hangzhou 310058, P. R. China
[b] Institute of Economic Studies, Charles University, Opletalova 26, 11100 Prague, Czechia
* Email: fahadali@zju.edu.cn, Tel: +86-130-83973971

Abstract

We document that Chinese stocks' Market, SMB and RMW factor returns exhibit early-in-the-week effects opposite-signed to those observed worldwide. Dominated by individual investors, Chinese stock market offers unique out-of-sample insight regarding the source of weekday seasonality, ascribed elsewhere to institutional investors' trading pattern. High returns to the market and to small, speculative stocks early-in-the-week pose a refuter to the mood explanation for the classical (negative) Monday effect. A battery of tests suggests that the pattern in three factors are jointly associated with Chinese individual investors whose demand is tilted towards small, speculative stocks. Our findings point to a potential role of dominant investor type in driving weekday patterns and the RMW premium.

1. Introduction and Motivation

- Why should a more profitable firms (such as, long leg of the Robust-minus-Weak factor of Fama and French's (2015) five-factor model) be riskier and offer extra compensation for risk?
- Novy-Marx (2013) acknowledges that both a behavioral interpretation and a rational latent risk premium interpretation are possible. However, economic interpretation of Profitability premium is neither elaborated by him, nor by Fama and French.
- Similarly, why should the less-investing firms' stocks (such as, long leg of the Conservative-minus-Aggressive factor of Fama and French' (2015) five-factor model) earn higher returns whereas larger investments represent additional risk, uncertainty in future profits and exposure to macroeconomic factors, which should be rewarded?

Given that the difference between a mispricing and a rational risk-based explanation is not straightforward to examine, Ülkü (2017) proposes and employs an indirect test that emerges from the anomalous calendar patterns in risk premia. He finds a strong positive Monday and early-in-the-week effect in Fama-French's RMW (Robust-minus-Weak) profitability factor premium: in the US, 94 % of RMW premium accrues on Mondays; and 135 % of it on Monday-Tuesdays, leaving the premium estimate for the rest of the week negative. Ali and Ülkü (2019) similarly show that the positive early-in-the-week effect in the RMW factor is pervasive worldwide.

Birru (2018) finds that strategy portfolios, for which the speculative leg is short, earn the highest return on Mondays, accounting for over 100 % of anomaly returns.

Ülkü (2017) explains positive early-in-the-week effect in returns of the factors that pick mispricing as institutional noise trading: Institutional investors trade on the wrong side during the formation period of value-type anomalies (Edelen, Ince, & Kadlec, 2016), and institutional trading intensity is known to be significantly less on Mondays or early in the week (Lakonishok & Maberly, 1990; Ülkü & Rogers, 2018).

- An important distinction of the Chinese stock market is that it is dominated by individual investors, unlike the US and other developed stock markets dominated by institutional investors. Hence, an out-of-sample evidence on weekday seasonality in China offers a natural experiment to gain insight into the drivers of this pattern observed worldwide.

2. Data and Methodology

- Our sample period runs from the beginning of 2001 through the end of 2016. Thus, we exclude early stages of market development.
- Daily Fama-French five factor return series are obtained from the China Stock Market and Accounting Research (CSMAR) database, which follows the standards of CRSP and Compustat databases and covers only A-shares.
- We employ value-weighted portfolios for which market capitalization weights are based on free float, excluding the nontradable shares (results are the same in both versions).
- As CSMAR does not report long and short legs of the factors, we reconstruct the factors and their legs, and use them in the analysis of legs.
- In constructing other factors (UMO, Individual-Minus-Institutional, and Short-minus-Zeroshort), we similarly include all A-share stocks listed on the Shanghai and Shenzhen stock exchanges.
- Investor shareholding data come from both CSMAR and Wind Financial Terminal.
- A day-of-the-week-dummy model is estimated via an AR(1)-EGARCH(1,1) specification.

$$R_t = \sum_{d=1}^{5} \alpha_d D_{d,t} + \rho R_{t-1} + u_t$$
$$u_t = z_t \sqrt{h_t} \qquad \ln(h_t) = c + \lambda u_{t-1} + \gamma |u_{t-1}| + \varphi \ln(h_{t-1})$$

where R_t is daily returns of the factor portfolio; and D_d are five day-of-the-week dummies (d = 1 denotes Monday, 2 Tuesday, ..., 5 Friday). The early-in-the-week (Monday-Tuesday) effect is measured by δ.

3. Key Findings

- Results indicate that the Chinese stock market displays intriguingly the opposite sign of these three weekday patterns. Chinese market returns are significantly higher early in the week, representing a sharp contrast to the well-known negative Monday effect observed worldwide in the past as well as a dramatic shift from the earlier results on Asian markets.
- The Chinese SMB factor similarly exhibits a significant positive early-in-the-week effect, again the opposite of the negative effect observed in the US.
- The Chinese RMW factor exhibits a significant negative early-in-the-week effect, the opposite of the positive effect observed in the US and worldwide. In sum, market returns are higher; small and less-profitable (i.e., more speculative) stocks outperform early in the week in China.
- Moreover, the UMO factor premium, which is significantly positive in the US, is negative in China. These findings point to institutional investor-induced effects being neutralized in an individual investor-dominated environment, consistent with the conjecture that the RMW and UMO premiums in the US might pick up mispricing due to institutional investors' anti-value trading.

3.1. Potential Reasons

- ❖ Robust over time?
- We divide our sample period into three equal-length subperiods and obtain rather similar results. This finding rules out spurious results driven by a specific subperiod.
- ❖ Lower mood at the beginning of the week?
- Birru (2018) and Abu Bakar, Siganos, and Vagenas-Nanos (2014) explain the conventional negative Monday effect by lower mood at the beginning of the workweek.
- In our case, the higher market returns and the outperformance of small and speculative stocks early in the week sharply contradict the mood explanation, which makes the results on China even more interesting.
- ❖ Do such (opposite) patterns have a common driver?
- Our testing suggests that the common part largely accounts for the pattern in all three factors, suggesting that a common driver might be responsible for all of them.
- Thus, we search for this common driver and test: what structural characteristics of the Chinese stock market might give rise to opposite weekday patterns?
- The Chinese stock market has at least two main characteristics that contrast with the US stock market: individual investor domination and government interference.
- ❖ Do government interference and/or short sales restrictions induce this effect?
- In several steps—including bubble-formation and bubble-burst periods and Short and Zero-short portfolios—we reach evidence that rules out government interference and short sale restrictions.
- ❖ Do individual investors drive this effect?
- Given that the Chinese stock market is dominated by individuals, most stocks in the Chinese stock market should experience a positive early-in-the-week effect, where small and more-speculative (less-profitable) stocks, i.e., the Small and Weak legs, known to be individual investor habitat, should experience 'stronger' positive early-in-the-week effects. If, alternatively, a decrease in institutional buying activity at the beginning of the week is the driver of the pattern, we should observe negative Monday-Tuesday effects in the Big- and Robust-leg. Evidence from the legs of the SMB and RMW factors supports the former conjecture: The Small (Weak) leg of the SMB (RMW) factor experiences a positive Monday-Tuesday effect, which is stronger than the Big (Robust) leg.

3.2. Robustness

- We corroborate this line of reasoning by showing that institutional investor ownership decreases (individual investor domination increases) monotonically as we move from the big size-quartile to small, and from the robust profitability-quartile to weak. Thus, the pattern is driven by the stronger positive early-in-the-week returns of those legs where individual investors prevail.
- Finally, and most importantly, utilizing a dataset of institutional shareholding in each and every stock, we rank stocks by the percentage of institutional ownership and construct an Individual-minus-Institutional factor portfolio. If the common pattern in three factors is related to individual investors' trading, this portfolio should exhibit a strong positive early-in-the-week effect.
- Overall, results support our prediction: the Individual-minus-Institutional portfolio exhibits a significant positive early-in-the-week effect, stronger in magnitude compared with the Market, SMB, and RMW factors. In other words, early-in-the-week returns are highest in those stocks where individual investors dominate the most and diminish as institutional ownership increases.

4. Conclusion

- In contrast to the well-known pattern of negative/low Monday returns, Chinese stocks earn positive/higher returns early in the week, which are more pronounced in small-cap and less-profitable (speculative) stocks. This results in opposite-signed early-in-the-week effects in the Market, SMB, and RMW factors relative to the US and other developed markets. This difference is consistent with the lack of institutional investor domination. For the significance in the opposite direction, existing literature does not offer an explanation. Our further analysis suggests that the pattern in three factors is consistent with a scenario where the net demand of individual investors shifts towards buying early in the week and particularly so for smaller and more speculative stocks.
- The sharp contrast in the seasonality of Chinese factors with developed markets offers a unique opportunity to rethink the explanations for weekday seasonality proposed so far.

Weekday seasonality in Chinese factors

	Mon	Tue	Wed	Thu	Fri	Wed-Fri	δ
Rm-Rf	0.115	0.149	0.063	-0.121	0.067	0.005	0.130
	(2.87)	(3.26)	(1.43)	(-2.80)	(1.54)	(0.19)	(3.30)
SMB	0.070	0.098	0.059	0.019	-0.014	0.003	0.072
	(4.25)	(5.40)	(3.09)	(1.05)	(-0.75)	(0.24)	(4.53)
HML	0.010	-0.013	-0.014	0.018	0.002	0.002	-0.004
	(0.77)	(-0.92)	(-1.04)	(1.30)	(0.15)	(0.21)	(-0.29)
RMW	-0.030	-0.058	-0.031	0.031	0.027	0.015	-0.055
	(-2.19)	(-3.71)	(-2.0)	(2.10)	(1.76)	(1.75)	(-4.20)
CMA	0.007	0.029	0.015	-0.011	-0.015	-0.007	0.024
	(0.61)	(2.51)	(1.28)	(-0.98)	(-1.26)	(-1.09)	(2.27)
UMO	-0.024	-0.004	-0.022	-0.035	-0.015	-0.021	0.009
	(-1.36)	(-0.21)	(-1.18)	(-1.90)	(-0.83)	(-1.96)	(0.53)

Formation versus burst period

	Formation		Burst	
	Wed-Fri	δ	Wed-Fri	δ
Rm-Rf	0.548	0.401	-0.070	-0.170
	(3.69)	(1.84)	(-0.38)	(-0.47)
SMB	0.211	0.024	0.373	-0.135
	(1.48)	(0.12)	(2.86)	(-0.66)
RMW	-0.096	-0.104	0.042	0.163
	(-1.35)	(-1.03)	(0.53)	(1.31)

Legs of Factors and an investor-habitat factor

Panel A. Legs of the SMB and RMW factors

Portfolio	Wed-Fri	δ	Institutional share
Small	0.034	0.274	6.68%
	(0.96)	(4.95)	
Big	0.012	0.186	9.43%
	(0.39)	(3.96)	
Robust	0.039	0.071	9.89%
	(1.45)	(1.75)	
Weak	0.059	0.213	6.83%
	(1.99)	(4.67)	

Panel B. Individual- versus institutional portfolios

	Wed-Fri	δ	Institutional share
Individual	-0.015	0.05	1.70%
	(-0.57)	(1.23)	
Institutional	0.038	0.019	14.46%
	(4.66)	(1.51)	
Ind-Minus-Inst	0.024	-0.013	
	(3.94)	(-1.36)	

Early-in-the-week effect in shorted stocks

	Wed-Fri	t-stats	δ	t-stats
Short	0.019	0.40	0.215	3.05
Zero-Short	0.120	2.48	0.228	3.11
Short-minus-zero-short	-0.090	5.42	-0.013	-0.53