

Data Project
MFE 431: Behavioral Finance
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Objective: Replicate the sales in growth anomalies discussed in class from the period 1990 to 2018

For many years, scholars and investment professionals have argued that value strategies outperform the market. This data project takes references from Josef Andrei and Robert (1994) and tries to investigate sales growth as an anomaly between 1990 to 2018.

This project will sort the stock into 10 deciles and identify the performance of the long-short portfolio against the performance of the market.

1. Universe of stocks:

Stock return data is sourced from CRSP while the sales data is sourced from compustat both available from WRDS. Following the LSV paper, I restrict the sample to common shares(share code 10 and 11) and to securities traded in the New York Stock Exchange, American Stock Exchange, or the Nasdaq Stock Exchange (exchange codes 1, 2, and 3) from 1990 Jan to 2018 Dec. Linking table is also needed to merge the Compustat with the the CRSP data.

2. Data cleaning:

2.a Handle missing data in Delisting Return (DLRET), and Return (RET):

The missing data in RET are denoted by 'A','C','P','S','T','B','C', The missing data in DLRET are denoted by -66, -77, -88, -99 Replace these missing data with NA.

2.b Delisting return calculation:

To calculate the cum-dividend return (Ret), let RET be cum-dividend return if DLRET is missing. If DLRET is not missing and RET is missing, let DLRET be just cum-dividend return. If both are not missing, use the formula from lecture notes: $Ret = (1 + DLRET)(1 + RET) - 1$ to get the cum-dividend return.

2.c Merging CRSP and Compustat:

Merge the Compustat data with Linktable first, then merge CRSP data with Compustat by variable gvkey and year. Do not remove the NAs in the dataset.

3. Criteria for sorting:

In this project, we follow the assumption from the Fama French paper(1993) that rebalancing takes place at the end of June by which most of the companies would have reported their earnings. Annual sales growth data is first generated using the sales data, firms that do not have sales data will not be included in the portfolio construction. Then a trailing 5 year average is then computed to sort the stocks into 10 portfolios.

Excess return is obtained by subtracting the risk free rate obtained from Fama French website from the portfolio return.

3. Result:

The result shown below indicates that the firms with low sales growth does deliver better return as compared to firms with higher sales growth. Typically the low sales growth as considered value firms with stable income stream while the glamour firms might be spending a lot to drive the sales growth.

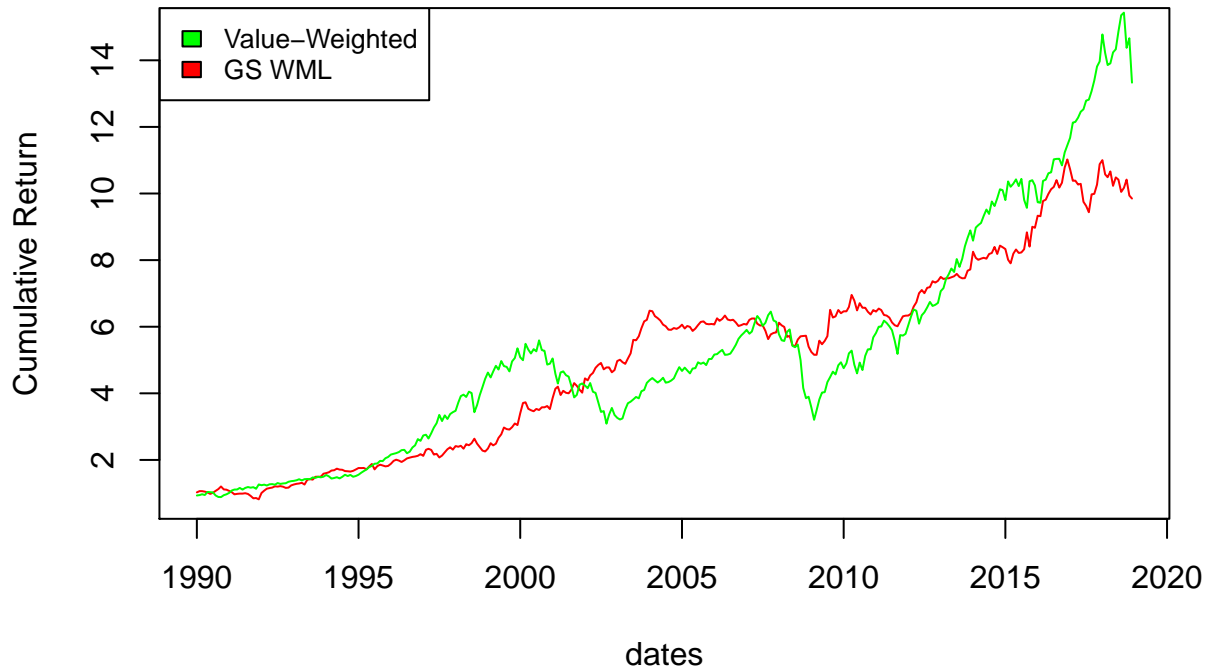
Table 1: Sales Growth decile portfolios

Return_Statistics	Sales Growth decile Portfolios										WML
	Decile.1	Decile.2	Decile.3	Decile.4	Decile.5	Decile.6	Decile.7	Decile.8	Decile.9	Decile.10	
Excess Mean Return	18.3185313	14.0332345	12.2888137	12.1149171	12.7696176	12.8736917	13.6440969	12.0465613	14.1400626	9.7147015	8.6038298
Volatility	26.0035701	17.6660499	15.8335304	14.8195504	15.6191258	15.7298126	16.7296674	17.9870841	20.1761047	24.6047111	11.9484347
SR	0.7044622	0.7943618	0.7761259	0.8174956	0.8175629	0.8184263	0.8155630	0.6697340	0.7008321	0.3948310	0.7200801
SK(m)	0.2048941	-0.5879342	-0.5695095	-0.7474612	-0.8103013	-0.8999307	-0.8116864	-0.8513019	-0.6632992	-0.4133581	0.9552933

Performance Against Market

The following chart illustrates the performance of the value strategy with sales growth, a break down of winner minus loser deciles and also a comparison with market value-weighted portfolio. SP500 value-weight portfolio is used as a benchmark portfolio. This indicates that a long-short strategy on growth sales along would not deliver superior return as compared to the market portfolio.

Growth Sales VS value-weighted Market Portfolio (1990–2018)



Appendix

Source code (R) : https://github.com/paragonhao/BehavioralFinance/blob/master/data_project_xiahao.R