How to conduct Multiple Screening

Riding on the fundamental, accounting, firm-specific and technical screens is a considerably easy ploy as there are so many sophisticated and quantitatively complicated valuation models in the equity research arena that rarely produce alpha. In fact, in the longer run, riding screens had actually produced surreal gain.

An investor with no knowledge about the market, industry and firm level dynamics could have earned an annualized return of 23.2% just using P/E multiple as the stock screening tool in an efficient New York Stock exchange during 1963-2006. An investor with no knowledge about the market, industry and firm level dynamics could have earned an annualized return of 24.3% just using P/B multiple as the stock screening tool in an efficient New York Stock exchange during 1963-2006. These ex-post return statistics is alluring because it is independent of business cycle movements and pricing has to be considered as the most efficient in NYSE.

Believers in the random walk theory pertinent to the stock exchange had hardly found any zeal to test the effectiveness of value based screening for predicting superior hedge ratio; as it is believed under the random walk behavior theory that stock price does incorporate all the past information and trends. So, even if at some phases, some of the screening tools and techniques have stood out; in the longer run the return generation should tilted towards the risk-adjusted benchmark level.

But there had been prevalence of different investment strategies that were successful in deriving superior performance on a longer run basis through outperforming the market return. Academicians have used different types of screening tools to understand the ex-post return behavior of the stock exchanges across the globe.

Screening tools are of different types – there can be backward looking (explains the ex-post return behavior) screens like trailing price/earning multiple, trailing price/book value multiples or these can be forward-looking (helps formulating strategies to tap significant future return) screens like forward P/E multiple, forward P/BV multiple, PVGO, earnings momentum. Some screening techniques like beta, market capitalization level, volatility deals with firm-specific numbers while building up investment strategies. Accounting data and ratios like capital expenditures, accruals, current ratios, tax, quick ratios etc. can be used as accounting screening and technical screening techniques use price and volume data of firms to construct MACD, RSI, MA of different time frames. At times, two-phased screening, three-phased screening or multiple screening techniques have been useful to generate alpha on a sustainable basis.

Fundamental screening tool	Author/ Authors	Data set	Hedge ratio
P/BV ratio	Fama & French, 1992	US (1962-89)	21.27%
	Frankel & Lee, 1998	US (1975-1993)	4.90%
	Leledakis & Davidson, 2001	UK (1980-1996)	18.84%
	Miles & Timmermann, 1996	UK (1975-1990)	9.90%
	Lakonishok, Schleifer & Vishny, 1994	US (1963-90)	7.30%
	Chan, Hamao and Lakonishok, 1991	JP (1971-88)	14.03%
P/E ratio	Fama & French 1992	US (1962-89)	9.90%
	Basu, 1977	US 1957-71	6.96%

	Lakonishok, Schleifer & Vishny 1994	US (1963-90)	3.90%
	Miles & Timmermann, 1996	UK (1975-1990)	3.17%
	Chan, Hamao and Lakonishok, 1991	JP (1971-88)	4.91%
D/E ratio	Leledakis & Davidson, 2001	UK (1980-1996)	15.24%
	Miles & Timmermann, 1996	UK (1975-1990)	3.41%
P/CF ratio	Lakonishok, Schleifer & Vishny 1994	US (1963-90)	9.90%
	Chan, Hamao and Lakonishok, 1991	Japan (1971-88)	10.03%
P/Dividend ratio	Miles & Timmermann, 1996	UK (1975-1990)	-1.90%
P/S ratio	Leledakis & Davidson, 2001	UK (1980-1996)	18.60%

Table: Effectiveness of backward looking fundamental screening techniques

Fundamental screening tool	Author/ Authors	Data set	Hedge ratio
Earnings surprises	La Porta, 1996	US (1982-91)	-20.90%
Sales growth	Frankel & Lee, 1998	US (1975-1993)	-7.80%
Long-term growth	Frankel & Lee 1998	US (1975-1993)	6.50%

Table: Effectiveness of forward looking fundamental screening techniques

At times, multiple screening turned out to be even more successful in generating alpha.

Fundamental screening tool	Author/ Authors	Data set	Hedge ratio
P/B and Size	Fama & French, 1992	US (1962-89)	12.55%
	Daniel & Titman, 1997	US (1963-93)	9.51%
P/E & Growth	Ahmed & Nanda, 2001	US (1982-97)	11.10%

Table: Effectiveness of backward looking multiple fundamental screening techniques

Academicians across the world have used different accounting and firm specific variables as fundamental screening tools in order to evaluate the effectiveness of investment strategies in different developed market across the world.

Author/authors	Screening variable	Significant screening variable
Abarbanell & Bushee , 1997	Capital expenditure, selling and administrative expense, inventory, accounts receivable and tax	Capital expenditure, selling and administrative expense, inventory, accounts receivable and tax
Barber & Lyon, 1997	Market capitalization	Market capitalization
Beneish, Lee & Tarpley 2001	Capital expenditure, accrual, market capitalization, research and development, volatility and age of the business	Research and development, volatility and age of the business
Chan, Hamao & Lakonishik, 1991	Beta and business size	Beta and business size
Fama & French, 2008	Accrual and capital expenditure	Accrual and capital expenditure
Haugen & Baker, 1996	Price volatility, beta, interest coverage	Price volatility

Lamont, 1998	Business size	Business size
Lev & Thiagarajan, 1993	Capital expenditure, research and development expenditure, sales and administrative expense	Capital expenditure, research and development expenditure, sales and administrative expense
Miles & Timmermann, 1996	Business size	Insignificant
Ou & Penman, 1989	Depreciation expense, accounts receivable, interest coverage	Depreciation expense, accounts receivable, interest coverage
Piotroski, 2000	Accrual expenditure	Accrual expenditure
Setiono & Strong, 1998	Depreciation expense, inventory, working capital ratio	Depreciation expense, inventory, working capital ratio

Table: Effectiveness of backward looking accounting and firm-specific screening techniques

In this part of the literature review, the researcher will discuss the popular fundamental, technical and firm-specific stock screening mechanisms, along with their limitations and benefits.

Price – earnings screen: Price-earning multiple has long been used as one of the most popular stock screening technique across the world; it is relatively very easy to understand and it is usually very easy to implement as well. Higher the fundamental ratio, lower is the ranking and the screened security will be sold short. On the other hand, lower this fundamental ratio – higher will be the ranking and the screened security will have a better opportunity to be held as a part of the portfolio. The generic problem while using this stock screening method is the ambiguity related with earnings – earning numbers can often be inflated or manipulated; with negative EPS this mechanism does not work at all.

Price – book value screen : Book value or value of equity can also be used to screen down a list of stocks and it is a preferable screening tool since book value per share can be zero at its very low. Moreover, for liquidating firms book value is the best measurement of valuation. In case of this stock picking strategy – the decision to be made is very straight away. Higher P/BV ratio, lower is the ranking and the screened security will be sold short. On the other hand, lower P/BV ratio – higher will be the ranking and the screened security will have a better opportunity to be held as a part of the portfolio. There can be stark difference between the book value and market value of numerous stocks and in these cases the book value of the asset is not even closer to the market value of the assets. For many firms numerous intangible assets are not part of the book value. Moreover, in case of an abnormally bull or bear market, screening conducted through price to book value ratio may not appropriately work.

Price – sales screen: Sales is less manageable and sales figures are well documented and price to sales ratios can also be used as a fundamental screening tool. Higher the price/sales ratio, lower is the ranking and the screened security will be sold short. On the other hand, lower the price/sales ratio – higher will be the ranking and the screened security will have a better opportunity to be held as a part of the portfolio. Through selling the accounts receivables, cash managers often manages the sales numbers and that is why analysts needs to take care of the sales numbers. Price to sales ratio is not a very good market screening solution at market extremes.

Price- cash flow screen: The most basic rationale which is generally provided before using price – cash flow ratio in stock screening approach is the transparency analyst mostly associate with cash flow. Cash flows are detectible and cash flows are not generally manageable. Higher the price/cash flow ratio, lower is the ranking and the screened security will be sold short. On the other hand, lower this price/cash flow ratio – higher will be the ranking and the screened security will have a better opportunity to be held as a part of the portfolio. Price to cash flow ratios may not be a good solution in the market extremes.

Contrarian strategy – It is a longer-range investment strategy, which generally focuses on the pricing behavior of the stock market. It is widely believed that stocks, which are performing poorly right now, will perform better in the coming years and stocks, which are performing, better right now will perform worse in the coming years. So, the investment analysts who believe in the contrarian strategy sells well performing securities and they generally purchase bad performing securities for the long.

Moving average screen: If there is a presence of golden cross, security will be included in the portfolio and in case of the dead cross – securities will be sold short. While using this price based screening, researcher should also look at the volume data as well; higher the degree of convergence of price with volume, greater will be the analyst's confidence over the success of the screening tool. For better results, some analysts also look at the volatility measurements while working on this screening – higher the buzz, better will be the confidence on the measurements.

Earning momentum screening: Under this investment strategy, stocks with positive earnings surprises are generally bought and stocks with negative earnings surprises are generally sold out. Obviously, earnings of the last financial year are the expected earning of the next year and quite obviously different difficult models can be utilized. So, the way analysts define earnings and most importantly earnings surprises may create frictions among the investment community.

RSI – relative strength index screen: Much like, moving average, RSI is also a price based screening tool which generally does provide better market timing solutions for the portfolio managers. When the portfolio manager uses RSI – 30-70 is considered to be the ultimate threshold level and if the RSI of a stock is more than 70, that particular security is considered as overheated and it is sold or sold short and it no longer becomes a part of the portfolio. On the contrary, if the RSI of a firm is lower than 30, then that particular security is considered as oversold and it has to become the part of the portfolio.

Size screening: It had been documented that the large companies often earn less return on an average in comparison to what the small companies often earn. So, while investing in small firms people want some size premium. Based on the input derived from the theoretical models, one should strategize that while including a stock in the portfolio the choice should be the lower size to get the higher size premium. While selling stocks or while selling stock short, the portfolio manager should pick those stocks with a higher business size.

MACD – moving average convergence divergence screen: If there is a presence of golden cross – the MACD line cutting off the signal line from below, security will be included in the portfolio and in case of the dead cross – the MACD line cutting off the signal line from above securities will be sold short.

Neglected stock screening: Glamour stocks are widely scrutinized and every research analyst has their very own idea of potential value about that particular company. So, the chances of earning abnormal profit by scrutinizing the neglected stock is considerably low. On the other hand, in case of neglected stock the electronic media and the analyst community very often keep silence and appropriate evaluation should deduce handful profit.

Momentum screening: Here the portfolio manager is focusing on the price momentum and momentum-based screenings are often considered as a short-term profit maximizing strategy. Under this momentum strategy, it is generally postulated that stocks with price hikes will be hold and stocks with a bad performance will be sold; as it is expected that the existing trend will prevail for long.

The insights of the academic literatures can be presented through the below mentioned table to garner a better idea about stock screening tools and techniques.

Screening tools	Holding portfolio signal	Short-sale portfolio signal
Price to earnings ratio	Lower the screen value	Higher the screen value
Price to book value ratio	Lower the screen value	Higher the screen value
Price to sales ratio	Lower the screen value	Higher the screen value
Price to cash flow ratio	Lower the screen value	Higher the screen value

Momentum screen	Overbought stock	Oversold stock
Contrarian screen	Bad performer	Good performer
Earning momentum	Positive surprise	Negative surprise
RSI	RSI less than 30	RSI more than 70
MA	Golden cross	Dead cross
MACD	Golden cross	Dead cross
Size screen	Small cap share	Large cap share
Neglected screen	Neglected stock	Glamour stock

Table – Stock screening – rule of thumb