Investars.com Rating Return Methodology

1. Performance of the Ratings

This algorithm is used to evaluate performance of stock ratings issued by research firms. Synthetic returns are calculated for individual stocks and a portfolio of stocks based on research firms ratings. During calculation, returns of "Buy", "Neutral", and "Sell" ratings are calculated separately and then aggregated. Rating performance can also be evaluated for 5 rating system, including "Buy", "Outperform", "Neutral", "Underperform", and "Sell".

The rating returns can be calculated in either absolute terms or relative terms with respect to a benchmark, e.g., S&P 500 index, for up to four years to date. The following metrics are provided to quantify the rating returns:

- Rating lifetime returns
- Daily returns

In order to calculate the returns, all issued ratings for stocks in a given period are collected and the rating lifetime periods are determined. A rating lifetime period is from the date when the rating is issued (rating start date, Ts) to the date when next rating is issued or the rating is dropped (rating end date, Te). For example, Figure 1 shows the following ratings for one stock, between T0 and Tn.

T_0: "Buy"
T_1: "Neutral"
T_2: "Sell"
T_n, "Neutral"

Since the second "Neutral" rating is issued at the last day of the evaluation period, it is not included in calculations. The rating lifetime periods for the other three ratings are shown in Figure 1.

Buy rating period: T_0 to T_1
Neutral rating period: T_1 to T_2
Sell rating period: T_2 to T_n

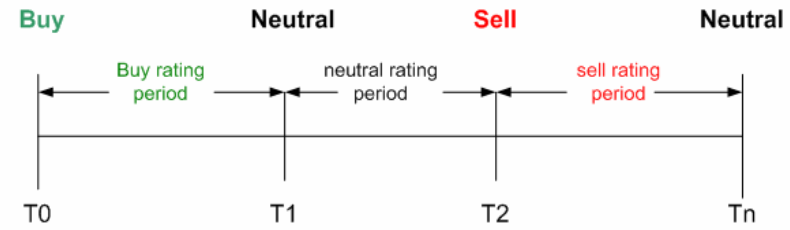

Figure 1. A sample rating and rating periods

If a rating is issued before the evaluation period ($t<T_0$), the rating start date is set to the first day of the period ($T_s=T_0$). It is called "carryover rating". For example in Figure 1, if the "Buy" rating is issued before T0, its rating period is still from T_0 to T_1.

If a rating is issued during the period but is ended after the period ($t>T_n$), the rating end date is set to the last day of the period ($T_e=T_n$). For example in Figure 1, if the "Sell" rating is changed to "Neutral" after T_n, the rating period for "Sell" is still from T_2 to T_n.

Once the rating lifetime periods are determined, rating returns are first calculated for each rating issued for each stock in the corresponding rating lifetime period. Then, the average rating return on each stock and the average rating return on each rating category can be determined. As a consequence, the daily returns can be calculated for individual stocks and portfolios. Next, the rating returns are defined in the absolute terms and the relative terms, respectively.

1.1 Rating Returns in Absolute Terms

1.1.1 Rating Lifetime Return

A. Returns of a Stock Rating

For any stock, the rating return of a single rating in its rating lifetime period is calculated using the stock closing prices at the rating start date and the rating end date (See Figure 2 for an example):

$$R_i\left(rt_j\right) = RW_i\left(rt_j\right) = \left[\frac{P_i\left(t_e\left(rt_j\right)\right)}{P_i\left(t_s\left(rt_j\right)\right)} - 1\right] \cdot 100\% \tag{1}$$

where:

rt_j : j^{th} rating in rt rating category, $rt \in \{buy, neutral, sell\}$

t_s, t_e : the rating calculation start date (the day after the rating date) and end date (the day of next rating date) for a rating

$R_i\left(rt_j\right)$, $RW_i\left(rt_j\right)$: rating lifetime return and weighted return of j^{th} rating in rt rating category for stock i , respectively

P_i : the closing price of stock i

If the closing price of the start/end date is not available, the closing price of the next trading day is used. The weighted return of a rating for a stock is equal to the rating lifetime return.

For a good "Buy" rating, the return is positive. People should long the stock. For a good "Sell" rating, the return is negative. People should short the stock.

Firm's Rating	Investars Normalized Rating (3 point scale)	Rating Start Date	Rating Start Price**	Rating End Date	Rating End Price	Price Change (%)	Overall Performance for WESTWOOD ONE INC (Lifetime Return %)
sell	sell	Nov 10, 2006	$6.59	Apr 16, 2007	$6.80 [Apr 16, 2007]	3.18%	3.18%
buy	buy	Apr 17, 2006*	$10.24	Nov 10, 2006	$6.59 [Nov 10, 2006]	-35.65%	-35.65%

Figure 2. A sample of the rating lifetime returns of ratings for a stock

If a stock has been rated with the same rating, e.g., "Buy", for more than once in the evaluation period, the rating lifetime and weighted returns of the stock rating are equal to the sum of the stock's rating lifetime returns divided by the number of the ratings in the same rating category in the evaluation period (See Figure 3 for an example). It is noted that the rating lifetime periods could be different for the ratings in the same category.

$$R_i\left(rt\right) = RW_i\left(rt\right) = \frac{\sum_{j=1}^{N_i(rt)} R_i\left(rt_j\right)}{N_i\left(rt\right)} \tag{2}$$

where:

$N_i(rt)$: the number of ratings in the *rt* rating category for stock *i*

$R_i(rt), RW_i(rt)$: the rating lifetime return and weighted return of the *rt* rating category for stock *i* , respectively

The total rating life return for a stock is equal to the return on the "Buy" rating category minus the return on the "Sell" rating category (See Figure 3 for an example). The "Neutral" rating return is not included.

$$R_i(Long + Short) = R_i(Long) - R_i(Short) \tag{3}$$

Ratings Level Performance Calculations

	Ratings Performance (%)	Number of Ratings	Overall Performance for WESTWOOD ONE INC (Lifetime Return %) [?]
NEGATIVE RATINGS (Underperform, Sell):	4.24%	1	4.24%
POSITIVE RATINGS (Outperform, Buy):	-78.78%	1	-78.78%
Overall Performance for WESTWOOD ONE INC:			-83.02%

Figure 3. A sample of the rating life time return for a stock

B. Returns of a Rating Category

The return of all stocks in a rating category is equal to the sum of the returns of all the ratings for all stocks divided by the total number of the ratings in the rating category (See Figure 4 for an example).

$$R(rt) = RW(rt) = \frac{\sum_{i=1}^{N_S} \sum_{j=1}^{N_i(rt)} R_i(rt_j)}{\sum_{i=1}^{Ns} N_i(rt)} \tag{4}$$

where:

N_S: the number of stocks covered by the firm or analyst

$R(rt),\ RW(rt)$: the average rating life time return and average weighted return of the *rt* rating category, respectively

C. Overall Rating Lifetime Returns of a Firm

The rating lifetime return achieved by a firm or an analyst in the evaluation period is the total return for both "Buy" and "Sell" rating categories. It is equal to the return of the "Buy" rating category minus the return of the "Sell" rating category (See Figure 4 for an example). The "Neutral" rating category is not included.

$$R(Long + Short) = R(Long) - R(Short) \tag{5}$$

Rank	Stock	Company	Last Rating	Number Of Ratings	Ratings Performance			Overall AVERAGE Return (%)
					Negative Ratings	Neutral Ratings	Positive Ratings	
1	TTEN.O*F03	3TEC Energy Corp	coverage drop	1		16.43%		
1	NDN	99 CENTS ONLY STORES	accumulate	1		-42.60%		
1	APC	ANADARKO PETE CORP	buy	1			85.37%	
1	APPB	APPLEBEES INTL INC	accumulate	1		33.56%		
1	AOG	AURORA OIL & GAS CORP	overweight	1			-48.32%	
1	BIG	BIG LOTS INC	overweight	2		8.84%	156.81%	
1	BDE	BOIS D ARC ENERGY INC	overweight	1			-11.75%	
1	BP	BP PLC	buy	1			63.38%	
1	EAT	BRINKER INTL INC	underweight	1	62.90%			
1	BRS	BRISTOW GROUP INC	buy	1			94.40%	
1	CPE	CALLON PETE CO DEL	accumulate	1			220.80%	
1	CRZO	CARRIZO OIL & CO INC	accumulate	1			434.55%	
1	CBRL	CBRL Group Inc	buy	1			71.03%	
1	CEC	CEC ENTMT INC	buy	1			132.49%	
1	CHK	CHESAPEAKE ENERGY CORP	buy	1			283.60%	
1	CVX	CHEVRON CORP NEW	accumulate	2		62.65%	38.86%	
1	CCU	CLEAR CHANNEL COMMUNICATIONS	coverage drop	1			34.28%	
1	CRK	COMSTOCK RES INC	buy	1			119.56%	
1	COP	ConocoPhillips	buy	1			153.05%	
1	DVN	DEVON ENERGY CORP NEW	buy	1			186.09%	
				Total Overall:	62.90%	34.20%	163.24%	100.34%

Percentage of time that positive ratings went up N/A

Figure 4. A sample of the rating lifetime returns for "Buy", "Neutral", and "Sell" rating categories and overall rating lifetime return for a firm/analyst with 13 stocks

1.1.2 Daily Returns

A. Returns of a Stock Rating

The daily return of a rating issued by a firm or an analyst for a stock is equal to the rating life time return calculated in (1) divided by the number of *weekdays* in the rating lifetime period (See Figure 5 for an example). The public holidays are included in the rating lifetime period because it is difficult to obtain all public holiday information for different countries. The notation "trading day" in the INSIGHT is NOT true.

$$RD_i\left(rt_j\right)=\frac{R_i\left(rt_j\right)}{t_e\left(rt_j\right)-t_s\left(rt_j\right)} \tag{6}$$

where:

$RD_i\left(rt_j\right)$: the daily return of j^{th} rating in the *rt* rating category for stock *i*

If a stock has been rated with the same rating for more than once in the evaluation period, the daily return of the rating category for the stock is equal to the sum of the stock's rating lifetime returns divided by the sum of weekdays in the rating lifetime periods.

$$RD_i\left(rt\right)=\frac{\sum_{j=1}^{N_i(rt)} R_i\left(rt_j\right)}{\sum_{j=1}^{N_i(rt)}\left[t_e\left(rt_j\right)-t_s\left(rt_j\right)\right]} \tag{7}$$

where:

$N_i\left(rt\right)$: the number of ratings in the *rt* rating category for stock *i*

$RD_i\left(rt\right)$: the daily return of the *rt* rating category for stock *i*

The total daily return for a stock is equal to the daily return of the "Buy" rating category minus the daily return of the "Sell" rating category.

$$RD_i\left(Long+Short\right)=RD_i\left(Long\right)-RD_i\left(Short\right) \tag{8}$$

Firm's Rating	Investars Normalized Rating (3 point scale)	Rating Start Date	Rating Start Price**	Rating End Date	Rating End Price	Price Change (%)	Duration (trading days)	Overall Performance for BP PLC (Daily Return %)
buy	buy	Apr 01, 2003*	$39.63	Apr 01, 2007	$64.75 [Mar 30, 2007]	63.38%	1044	0.06%

Figure 5. A sample of the daily return for a stock

B. Returns of a Rating Category

The daily return of all ratings in a rating category issued by a firm or an analyst is equal to the sum of the rating lifetime returns of all the ratings for all stocks divided by the sum of the number of weekdays in all rating lifeline periods in the rating category (See Figure 7 for an example).

$$RD(rt) = \frac{\sum_{i=1}^{N_S} \sum_{j=1}^{N_i(rt)} R_i\left(rt_j\right)}{\sum_{i=1}^{Ns} \sum_{j=1}^{N_i(rt)} \left[t_e\left(rt_j\right) - t_s\left(rt_j\right)\right]} \tag{9}$$

where:

$RD(rt)$: the daily return of the *rt* rating category for all covered stocks by the firm or analyst

C. Overall Returns of a Firm or an Analyst

The daily return achieved by a firm or an analyst in the evaluation period is the total daily return for the "Buy" and "Sell" rating categories. It is equal to the daily return of the "Buy" rating category minus the daily return of the "Sell" rating category (See Figure 6 for an example).

$$RD(Long + Short) = RD(Long) - RD(Short) \tag{10}$$

Rank	Stock	Company	Last Rating	Number Of Ratings	Ratings Performance			Overall DAILY Return (%)
					Negative Ratings	Neutral Ratings	Positive Ratings	
1	IPS	IPSCO INC	overweight	1			2.99%	2.99%
2	TBI^E04	Tom Brown	coverage dropped	3		0.18%	2.69%	2.69%
3	AMEV.O^B04	Appl Molecular	coverage dropped	1			2.40%	2.40%
4	WTHNY	WIDERTHAN CO LTD	coverage dropped	3		-0.46%	2.31%	2.31%
5	COGT	COGENT INC	neutral	2		-0.09%	1.86%	1.86%
6	NILE	BLUE NILE INC	neutral	2		0.03%	1.53%	1.53%
7	USG	U S G CORP	underweight	1	-1.31%			1.31%
8	SDA	SADIA S A	coverage dropped	1			1.27%	1.27%
9	KBAY^	KANBAY INTL INC	coverage dropped	2		0.03%	1.26%	1.26%
10	PCSA.O^B05	AirGate PCS	coverage dropped	1	-1.17%			1.17%
11	OMPI	OBAGI MEDICAL PRODUCTS INC	overweight	1			1.15%	1.15%
12	WWCA.O^H05	Western Wireless	coverage dropped	1			1.11%	1.11%
13	OMTR	OMNITURE INC	overweight	1			1.07%	1.07%
14	SONC	Sonic Corp	overweight	2		-0.13%	1.06%	1.06%
15	CME	CHICAGO MERCANTILE HLDGS INC	overweight	2		0.18%	1.02%	1.02%
16	DRC	DRESSER-RAND GROUP INC	overweight	1			0.96%	0.96%
17	HYDL	Hydril	neutral	2		0.03%	0.94%	0.94%
18	HNSN	HANSEN MEDICAL INC	overweight	1			0.91%	0.91%
19	SIRI	SIRIUS SATELLITE RADIO INC	overweight	7	-0.39%	0.05%	1.40%	0.87%
20	X	UNITED STATES STL CORP NEW	overweight	1			0.85%	0.85%
				Total Overall:	0.11%	0.08%	0.09%	-0.01%

Figure 6. A sample of the daily returns for "Buy", "Neutral", and "Sell" rating categories and overall daily return for a firm

1.2 Rating Returns in Relative Terms

The rating performance of firms and analysts can also be evaluated in relative terms against benchmarks. Four types of benchmarks are defined and used.

1. DJ Industry Average
2. S&P 500 index
3. NAS/NMS Composite
4. Russell 2000 index

The analyst performance index for any rating is defined as average return of all stocks covered by the firm or analyst during the rating lifetime period of the stock rating

$$R_{APT}\left(i, rt_j\right) = \frac{\sum_{i=1}^{N_S}\left[\frac{P_i\left(t_e\left(rt_j\right)\right) - P_i\left(t_s\left(rt_j\right)\right)}{P_i\left(t_s\left(rt_j\right)\right)} \cdot 100\%\right]}{N_S} \tag{11}$$

where:

$R_{APT}\left(i, rt_j\right)$: the API for j^{th} rating in the *rt* rating category for stock *i*

Similarly, the S&P 500 index and Russell 2000 index are defined as the returns of the indexes during the rating lifetime period of the stock rating:

$$R_{SP}\left(i, rt_j\right) = \frac{P_{SP}\left(t_e\left(rt_j\right)\right) - P_{SP}\left(t_s\left(rt_j\right)\right)}{P_{SP}\left(t_s\left(rt_j\right)\right)} \cdot 100\% \tag{12}$$

$$R_{RU}\left(i, rt_j\right) = \frac{P_{RU}\left(t_e\left(rt_j\right)\right) - P_{RU}\left(t_s\left(rt_j\right)\right)}{P_{RU}\left(t_s\left(rt_j\right)\right)} \cdot 100\% \tag{13}$$

where:

$R_{SP}\left(i, rt_j\right)$: the S&P 500 index for j^{th} rating in the *rt* rating category for stock *i*

$R_{RU}\left(i, rt_j\right)$: the Russell 2000 index for j^{th} rating in the *rt* rating category for stock *i*

The rating lifetime return in relative terms is defined as the rating lifetime return in absolute terms from (1) minus the benchmark in the same rating lifetime period (See Figure 9 for an example):

$$R_i^{BN}\left(rt_j\right) = R_i\left(rt_j\right) - R_{BN}\left(i, rt_j\right) \tag{14}$$

where:

$BN \in \{API, S\&P, Russell\}$:

$R_i^{BN}\left(rt_j\right)$: the relative rating life time return of j^{th} rating in the *rt* rating category for stock *i* with respect to an benchmark *BN*

Firm's Rating	Investars Normalized Rating (3 point scale)	Rating Start Date	Rating Start Price**	S&P 500 Index at the Start Date	Rating End Date	Rating End Price	S&P 500 Index at the End Date	Price Change (%)	S&P 500 Index Change (%)	Overall Performance for 3M CO (Lifetime Return %)
overweight	outperform	Jul 07, 2006	$74.10	1265.48	Apr 01, 2007	$76.43 [Mar 30, 2007]	1420.86	3.14%	12.27%	-9.13%
neutral	perform	Jul 21, 2003	$68.18	978.8	Jul 07, 2006	$74.10 [Jul 07, 2006]	1265.48	8.69%	29.28%	-20.59%
underweight	underperform	Apr 01, 2003*	$65.42	858.48	Jul 21, 2003	$68.18 [Jul 21, 2003]	978.8	4.21%	14.01%	-9.80%

Figure 7. A sample of the relative rating lifetime return with respect to S&P index for a stock

The calculation of other returns in relative terms follows the similar calculation of the performance in absolute terms with the rating life time return being represented in relative terms as (14).