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ASIA PACIFIC

QUANTITATIVE RESEARCH

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Alpha evidence for target prices and analyst recommendations

Scholarly research shows the investment potential of revisions in analyst recommendations and target prices, with an emphasis on the value of combining different types of analyst forecast data in order to identify predictions of high conviction.

Figure 1: CIMB analyst coverage universe alpha screen

BB ticker	Company	From rec	To rec	Days since rev	Rec score	From TP	To TP	% chg	Days since rev	TP score	Total score
Stocks predicted to outperfom according to these ideas											
2727 TT	Wowprime Corp	N	O/P	1	0.98	435.00	555.00	28%	1	0.98	1.97
AAX AU	Ausenco	N	O/P	7	0.84	1.61	2.89	80%	7	0.84	1.68
FNP AU	Freedom Foods	N	O/P	19	0.65	1.65	2.47	50%	19	0.65	1.30
NAB AU	National Australia Bank	N	O/P	21	0.62	31.72	35.02	10%	21	0.62	1.24
3231 TT	Wistron Corp	N	O/P	21	0.61	29.00	38.00	31%	21	0.61	1.22
RHBC MK	RHB Capital Bhd	N	O/P	83	0.15	9.90	11.30	14%	9	0.81	0.96
BKW AU	Brickworks	N	O/P	5	0.90	13.96	14.33	3%	5	0.00	0.90
1913 HK	Prada SpA	N	O/P	264	0.00	80.00	90.00	13%	7	0.85	0.85
SIE SP	SIA Engineering	N	O/P	7	0.85	5.00	5.20	4%	7	0.00	0.85
Stocks predicted to underperform according to these ideas											
SGRO IJ	Sampoerna Agro	N	U/P	21	-0.62	2000.00	960.00	-52%	21	-0.62	-1.24
EYSAN SP	Eu Yan Sang Int'l	O/P	U/P	28	-0.52	0.89	0.75	-16%	28	-0.52	-1.05
BLY AU	Boart Longyear	N	U/P	29	-0.51	0.69	0.36	-48%	29	-0.51	-1.02
BANPU TB	Banpu	N	U/P	2	-0.97	280.00	277.00	-1%	2	0.00	-0.97
PRA SP	Parkson Retail Asia	O/P	U/P	34	-0.46	1.88	1.38	-27%	34	-0.46	-0.91
891 HK	Trinity	N	U/P	34	-0.46	3.30	2.40	-27%	34	-0.46	-0.91
RBXY IN	Ranbaxy Laboratories	N	U/P	7	-0.85	320.00	290.00	-9%	7	0.00	-0.85
1836 HK	Stella Int'l Holdings	O/P	U/P	37	-0.42	24.90	14.10	-43%	37	-0.42	-0.85
028670 KS	STX Pan Ocean	N/R	U/P	40	0.00	1380.00	295.00	-79%	12	-0.75	-0.75

SOURCE: CIMB

We highlight valuable ideas from a recent book titled “The alpha interface: Forty trading strategies based on scientific findings about analyst forecasts”, authored by Dr Jeffrey Mishlove in the US. With permission from the author, we proceed with a series of notes on his books.

Recommendation changes add value

Several academic studies show that revisions in analyst recommendations are able to predict share price performance. A study covering the G7 countries finds strong abnormal returns for stocks with recent upgrades and downgrades, especially in the US and Japan.

Upgrade to what?

An upgrade to ‘buy’ is more effective than an upgrade to ‘hold’, ie, the recommendation level matters when looking at revisions.

Target price revisions

Revisions in target prices only add value if they don’t conflict with the analyst’s recommendation, ie, you should buy into target price upgrades only for stocks with a current ‘buy’ recommendation.

Initiations outperform

Initiations of coverage generally lead to a permanent increase in liquidity and subsequent share price appreciation.

BACKGROUND

I recently came across this insightful series of books by Dr Jeffrey Mishlove, who shares my thirst for new alpha and has frankly made our job a lot easier. With sincere gratitude to the author, we highlight a few papers referred to in the first book of the 'alpha interface' series. We believe that these sensible ideas offer new ways to profitably apply analyst recommendations and target prices in a more holistic way.

The aim of this review is to stimulate debate on the topic of analyst forecast information, which will be followed up by empirical testing and potentially new hypotheses about the predictive value of this data and how to best apply it in Australia and the rest of Asia.

Table 1 on the front page recommends stocks to buy and sell based on these ideas. This quantitative screen takes advantage of CIMB's broad coverage of almost 1,000 stocks across Asia. The exact workings of the quantitative metrics are explained towards the end of this document.

ANALYST RECOMMENDATIONS AND TARGET PRICES

Capturing price trends after recommendation changes

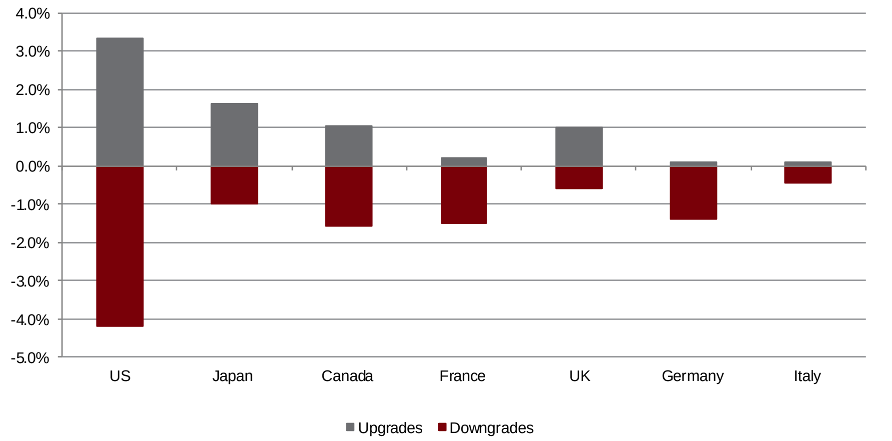
Changes in analyst recommendations help predict future price trends

The market pays attention when analysts revise their recommendations from negative to positive and vice versa. Boni and Womack (2006) show that consensus buy/hold/sell recommendations have no predictive value on their own because a lot of this information tends to be quite stale. However, recommendation changes have strong predictive value, especially within industries.

Jegadeesh and Kim (2006) investigate this idea for all the G7 countries including the US, Japan, UK, France, Germany, Italy and Canada on a large sample of IBES data between 1993 and 2002. They find that US shares experience the strongest price trends after recommendation revisions, followed by Japan. In their study, upgrades are usually followed by positive price momentum, and vice versa for downgrades.

The next chart shows the average performance, by country, over a one month period after a typical upgrade or downgrade. Returns are relative to the local market index. In their study the US market provides the largest opportunity for predicting stock returns from recommendation changes.

Figure 2: Event study 1m after recommendation changes – abnormal returns



	US	Japan	Canada	France	UK	Germany	Italy
Upgrades	3.3%	1.6%	1.1%	0.2%	1.0%	0.1%	0.1%
Downgrades	-4.2%	-1.0%	-1.6%	-1.5%	-0.6%	-1.4%	-0.4%
Difference	7.5%	2.6%	2.6%	1.7%	1.6%	1.5%	0.5%

SOURCE: JEGADEESH & KIM, JOURNAL OF FINANCIAL MARKETS, 2006

Analysts tend to follow share prices, but do have some skill in predicting the continuation of trends. The next two charts show that upgrades tend to happen after a run-up in the share price (and vice versa for downgrades) and the trend in the share price tends to continue thereafter, allowing investors to benefit from following recommendation revisions. These charts are event studies showing the average cumulative abnormal returns for the two weeks (10 working days) before and two weeks after upgrades and downgrades in each country. On the horizontal axes, '0' indicates the day of the upgrade or downgrade event.

Figure 3: Cumulative abnormal event returns around upgrades

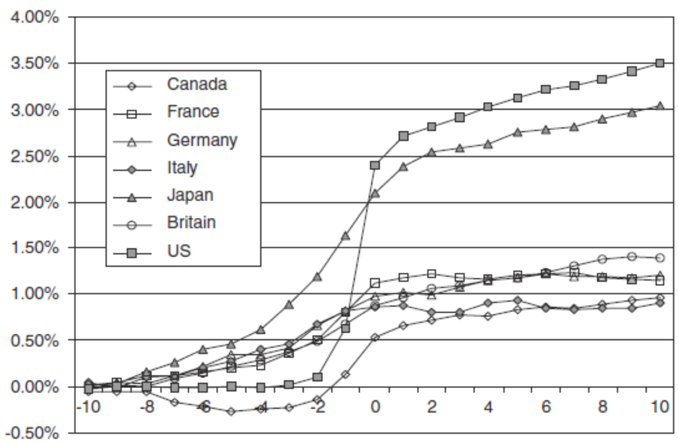
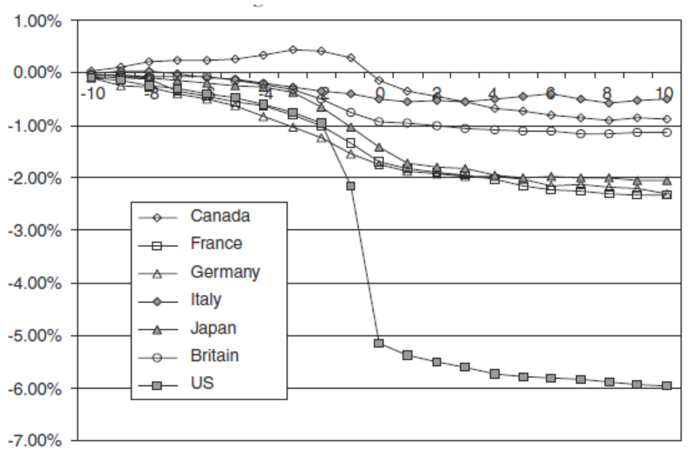


Figure 4: Cumulative abnormal event returns around downgrades



SOURCE: JEGADEESH & KIM, JOURNAL OF FINANCIAL MARKETS, 2006

The authors simulate a long-short investment strategy that buys a portfolio of recent upgrades and sells a portfolio of recent downgrades. Their thorough analysis is split between small versus large companies and equal versus market cap weighting, as well as showing the impact of trading on delayed information.

A realistic long-short back test demonstrates significant alpha within the majority of G7 countries

For institutional investors the most realistic back test is shown below, for large companies (above the median size within the stock universe) using market cap weighted portfolios with a holding period of one month. In this back test, the US market delivers 23% pa when trading at the close on days with recommendation revisions. This deteriorates to 7% pa if trading is at the close of the next day. In reality the opportunity may lie somewhere in-between, because there is often a delay due to the late arrival of data and the time it takes to process and analyse information. Japan and Canada also produce statistically and economically significant profits in the back test.

Figure 5: Long-short portfolio back test for recommendation changes (annualised)

	No delay	1 day delay	5 day delay
US	23%	7%	2%
Japan	18%	9%	5%
Canada	11%	5%	-2%
Germany	8%	4%	5%
Britain	7%	5%	4%
Italy	4%	0%	2%
France	2%	-2%	0%

SOURCE: JEGADEESH & KIM, JOURNAL OF FINANCIAL MARKETS, 2006

An interesting observation from Boni and Womack (2006) is that recommendation changes are not very useful on an aggregated industry or sector level. Their back test improves considerably when their investment strategy is implemented on a sector-neutral basis. It suggests that analysts are not good at evaluating the relative potential of their sectors overall, but are very good at predicting the future relative performance of stocks within their sectors.

Barber et al show in a 2003 paper that the market turned sharply against US analyst recommendations in 2000-2001 after the peak in the tech bubble, which effectively reduced the significance and understates the effect of analyst recommendation changes in the pre-2000 period. It serves as a warning that strategies like these can potentially suffer big draw-downs during and after periods of great market volatility, as we experienced again after 2007.

Recommendation levels and double revisions

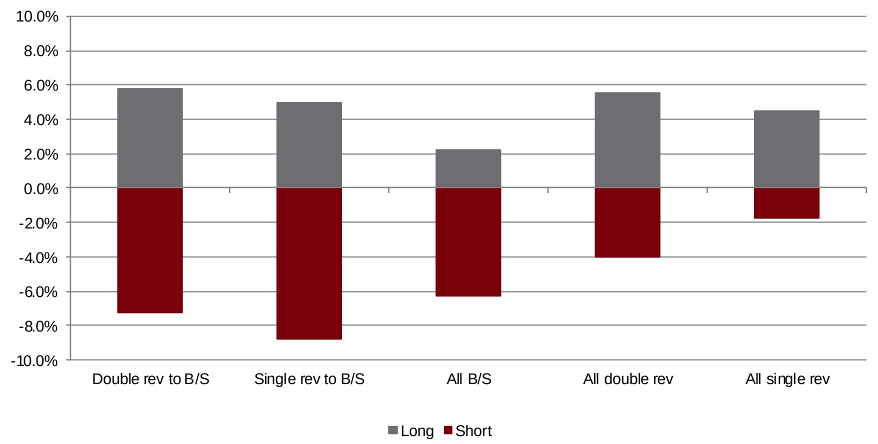
Recommendation upgrades and downgrades are most effective when used in conjunction with the level of a recommendation, ie, upgrades to 'buy' are better than upgrades to 'hold'

A more recent US study by Barber and Lehavy (2010) finds that recommendation levels actually have predictive value when used in conjunction with recommendation changes. For example, a stock upgraded to 'buy' or 'strong buy' significantly outperforms a stock upgraded to 'sell' or 'hold'. Stocks double-upgraded or double-downgraded, eg, from 'hold' to 'strong buy', deliver similar results. Their data is more extensive than previous studies, covering the period from 1986 to 2006.

The next chart and table summarise the annualised long versus short performance of their different back-tested investment strategies (numbers may be subject to rounding errors). The first two columns are for strategies that combine recommendation changes and levels, the third for recommendation levels only, and the last two for recommendation changes only. Clearly, all the different types of information – recommendation levels as well as changes - add value, but they work best when combined.

The first column in the chart is for a strategy that goes long the stocks that are upgraded two levels to 'buy' or 'strong buy' and short stocks downgraded two levels to 'sell' or 'strong sell'. The long portfolio earns 5.8% pa and the short portfolio earns -7.3% pa (ie, 13% pa long-short), after adjusting for beta, size, value and momentum effects. The second column is similar to the first, but for revisions of one level only, which actually performs slightly better. The third column is for a strategy that goes long all 'buy' and 'strong buy' recommendations and short all 'sell' and 'strong sell' recommendations, irrespective of the direction of the revision. The level of recommendation therefore adds unique information when the data is not stale (ie, the recommendation was recently revised). The last two columns show the profit to strategies based on double and single revisions, irrespective of the new recommendation level.

Figure 6: Annualised abnormal returns from combined recommendation levels/changes strategy



	Long	Short	Long-short
Double rev to B/S	5.8%	-7.3%	13.0%
Single rev to B/S	5.0%	-8.8%	13.8%
All B/S	2.3%	-6.3%	8.5%
All double rev	5.5%	-4.0%	9.5%
All single rev	4.5%	-1.8%	6.3%

SOURCE: BARBER ET AL, FINANCIAL MANAGEMENT, 2010

Target price upgrades and downgrades are quite effective when used in conjunction with the level of a recommendation

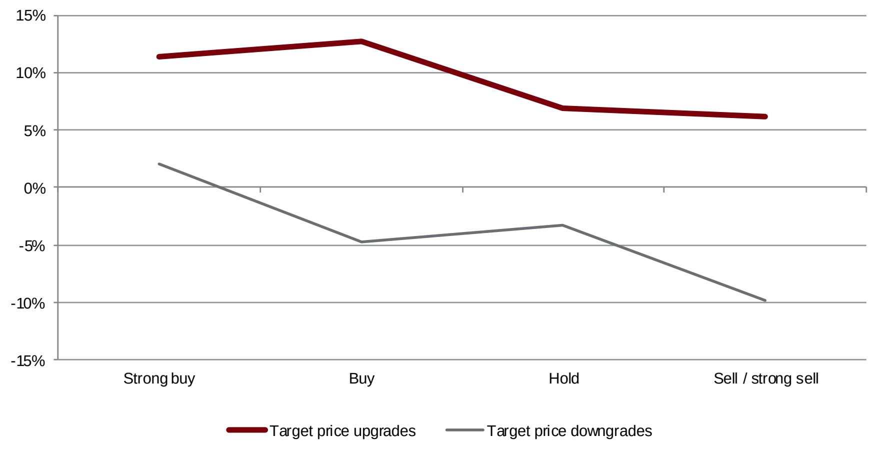
Target price revisions and recommendations

Kanne et al (2012) came up with very interesting results on 12-month analyst target prices. In this study of US data, across 2001 to 2007, they find that revisions in target prices tend to predict future price moves very well, as long as there is no conflict with the analyst's own recommendation level. In other words, a target price upgrade is only useful if the analyst has a 'buy' or 'strong buy' on the stock, and vice versa for a target price downgrade.

The authors use target price revisions in conjunction with analyst recommendation levels to filter out those revisions that are expected to be more predictive than others, ie, separating signals from noise. An example of where this approach is effective in avoiding wrong signals is as follows: when an analyst has a 'buy' recommendation on a stock and the share price subsequently falls, the analyst may reduce their target price to be more realistic, but still maintain their buy recommendation because the stock is now even cheaper. The paper also provides a reasonable argument that target price upgrades can provide additional information above a 'strong buy' recommendation because it indicates added conviction when further recommendation upgrades aren't possible (and vice versa for downgrades).

The following chart shows the one-month abnormal return for a stock with large target price upgrades as well as downgrades within different recommendation categories. A target price revision is classified as large when it is within the top or bottom quintile (1/5th) of past revisions in their dataset. Returns are measured over a one month period and numbers are annualised. The authors assume a one day delay before trading on target price revisions, which is quite conservative. We have taken these numbers from Table 4 in the Kanne et al (2012) paper and annualised them. It is clear that target price upgrades perform better within the positive recommendation categories, while target price downgrades underperform the most within the negative recommendation categories. Note that the authors combine the 'sell' and 'strong sell' categories because the data for these is quite sparse.

Figure 7: Annualised abnormal returns for target price revisions in different recommendation categories



SOURCE: KANNE ET AL, FINANCIAL MARKETS AND PORTFOLIO MANAGEMENT, 2012

Investment portfolios can therefore benefit from tilts on the best and worst performing categories in terms of target price revisions within recommendation categories. A sensible long-short investment strategy is therefore to buy the stocks with large target price upgrades in the buy/strong buy categories and short the stocks with large target price downgrades in the sell/strong sell categories. In their back tests this produces an abnormal return of 21.9% pa.

The authors repeat the back test for target price revisions that coincide with recommendation revisions. A strategy that goes long stocks with target price upgrades and simultaneous recommendation upgrades to buy/strong buy, while shorting stocks with target price downgrades and simultaneous recommendation downgrades to sell/strong sell, with each trade held for one month, earns an annualised return of 27.4% in their back test. This strategy, however, may not produce a very consistent stream of trading opportunities because the bar is set very high.

As part of their analysis, the authors also uncover interesting facts about typical analyst behaviour. For example, target price revisions usually (85% of the time) occur independently of recommendation revisions. Analysts also tend to revise their target prices down after a drop in the share price, but they usually do not revise their target prices up after a run-up in the share price.

Buy initiations offer incremental value

Initiation of analyst coverage tends to be followed by a permanent increase in liquidity and generally positive abnormal returns

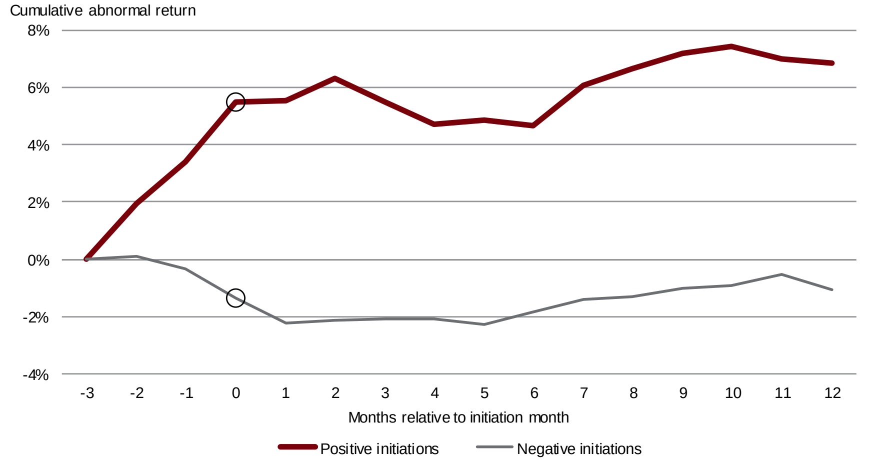
It takes a certain commitment - in terms of time and effort - for sell-side analysts to initiate research coverage on a firm. Analysts should therefore be more inclined to initiate coverage when they believe a share price is under-valued or over-valued and that its purchase or sale would be of significant value to their clients. There are a number of additional reasons why analysts may initiate coverage where the argument for share price support is less clear. But despite these different incentives, evidence suggests that the majority of initiations impact share prices positively through a permanent improvement in liquidity and that the overall initiation effect tends to be positive.

Paul Irvine (2003) investigates the price impact of new buy/hold/sell recommendations for initiations and finds the price impact to be stronger than for analysts with existing coverage (termed as 'continuations'). For example, initiations with a 'strong buy' recommendation beat the market on average by 1.49% while continuations beat the market by a lesser 0.75% (the difference is highly significant with a t-stat of 2.13) in the two days around an initiation.

His data sample consists of 1259 analyst initiations in the US market, during 1995, within the IBES database. For comparative purposes he matches each initiation with a 'continuation' observation for the same stock and calendar quarter.

Initiations of coverage normally happen *after* large share price moves. Positive initiations tend to be followed by additional positive momentum in the share price over the next 12 months, which merits further investigation.

Figure 8: Event study to show the monthly cumulative abnormal returns around initiations of coverage



SOURCE: PJ IRVINE, JOURNAL OF CORPORATE FINANCE, 2003

OUR QUANTITATIVE SCREEN BASED ON THESE IDEAS

We recommend sensible metrics to screen the most attractive stocks according to the ideas set out in this document. The stock screen on the front page (Table 1) takes advantage of the vast CIMB coverage of almost 1000 stocks across Asia.

Our screen makes use of the following findings:

- Initiations with positive recommendations tend to beat the market going forward because of both the analyst signal and a general uplift in liquidity.
- Stocks upgraded to a positive recommendation tend to beat the market going forward.
- Stocks downgraded to a negative recommendation tend to underperform the market going forward.
- Upgrades in target price for stocks with a positive recommendation tend to beat the market going forward.
- Downgrades in target price for stocks with a negative recommendation tend to underperform the market going forward.

The papers we highlight all show relatively fast time decay in the informational value of analyst revisions, and we allow for this in our quant scores. Both the 'recommendation score' and 'target price' scores apply an exponential time weighting, which assigns higher weight to more recent recommendations or target price revisions.

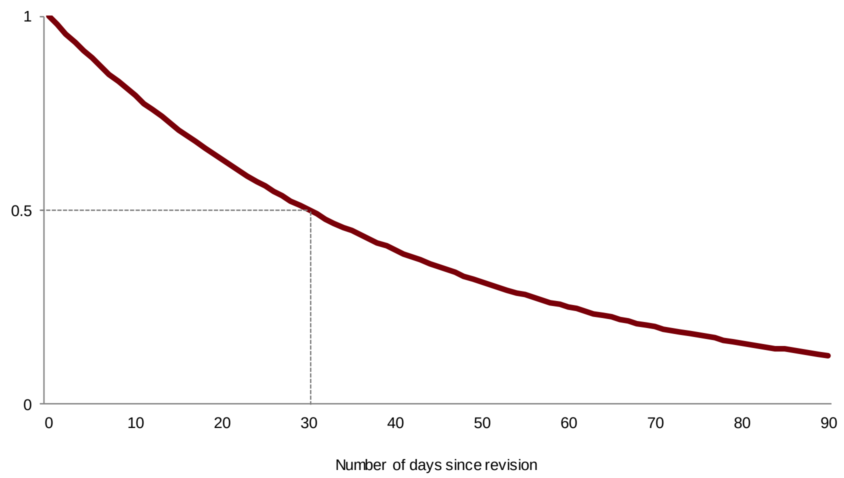
For the 'recommendation score', new positive initiations are assigned a score of +1, upgrades to a positive recommendation are also assigned +1, while downgrades to a negative recommendation are assigned a score of -1. These scores are then deflated by an exponential time decay factor, with a half-life of 30 calendar days. In other words, the time decay factor is 1.0 on the day of an analyst revision, decaying exponentially to exactly 0.5 when reaching 30 calendar days after the revision occurred.

As above, a 'target price score' of +1 is assigned to stocks with an upgrade in target price (greater than +10%) and a simultaneous positive analyst recommendation, while a score of -1 is assigned to a stock with a downgrade in target price (greater than -10%) and a simultaneous negative analyst recommendation. The same time decay factor is applied as described above.

*Score = +/-1 * exp(# days since revision * log(0.5) / 30)*

The 'total score' is simply a sum of the 'recommendation score' and the 'target price score'.

Figure 9: Exponential time decay function with 30-day half-life



SOURCE: CIMB

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The survey result is as of the date appearing in the Corporate Governance Report of Thai Listed Companies. As a result, the survey result may be changed after that date. CIMBS does not confirm nor certify the accuracy of such survey result.

Score Range:	90 – 100	80 – 89	70 – 79	Below 70 or	No Survey Result
Description:		Excellent	Very Good	Good	N/A

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Distribution of stock ratings and investment banking clients for quarter ended on 31 August 2013 1211 companies under coverage		
	Rating Distribution (%)	Investment Banking clients (%)
Outperform/Buy/Trading Buy	50.5%	7.2%
Neutral	34.1%	4.8%
Underperform/Sell/Trading Sell	15.4%	4.9%

Recommendation Framework #1 *

Stock

OUTPERFORM: The stock's total return is expected to exceed a relevant benchmark's total return by 5% or more over the next 12 months.

NEUTRAL: The stock's total return is expected to be within +/-5% of a relevant benchmark's total return.

UNDERPERFORM: The stock's total return is expected to be below a relevant benchmark's total return by 5% or more over the next 12 months.

TRADING BUY: The stock's total return is expected to exceed a relevant benchmark's total return by 5% or more over the next 3 months.

TRADING SELL: The stock's total return is expected to be below a relevant benchmark's total return by 5% or more over the next 3 months.

Sector

OVERWEIGHT: The industry, as defined by the analyst's coverage universe, is expected to outperform the relevant primary market index over the next 12 months.

NEUTRAL: The industry, as defined by the analyst's coverage universe, is expected to perform in line with the relevant primary market index over the next 12 months.

UNDERWEIGHT: The industry, as defined by the analyst's coverage universe, is expected to underperform the relevant primary market index over the next 12 months.

TRADING BUY: The industry, as defined by the analyst's coverage universe, is expected to outperform the relevant primary market index over the next 3 months.

TRADING SELL: The industry, as defined by the analyst's coverage universe, is expected to underperform the relevant primary market index over the next 3 months.

** This framework only applies to stocks listed on the Singapore Stock Exchange, Bursa Malaysia, Stock Exchange of Thailand, Jakarta Stock Exchange, Australian Securities Exchange, Taiwan Stock Exchange and National Stock Exchange of India/Bombay Stock Exchange. Occasionally, it is permitted for the total expected returns to be temporarily outside the prescribed ranges due to extreme market volatility or other justifiable company or industry-specific reasons.*

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Recommendation Framework #2 **

Stock

OUTPERFORM: Expected positive total returns of 10% or more over the next 12 months.

NEUTRAL: Expected total returns of between -10% and +10% over the next 12 months.

UNDERPERFORM: Expected negative total returns of 10% or more over the next 12 months.

TRADING BUY: Expected positive total returns of 10% or more over the next 3 months.

TRADING SELL: Expected negative total returns of 10% or more over the next 3 months.

Sector

OVERWEIGHT: The industry, as defined by the analyst's coverage universe, has a high number of stocks that are expected to have total returns of +10% or better over the next 12 months.

NEUTRAL: The industry, as defined by the analyst's coverage universe, has either (i) an equal number of stocks that are expected to have total returns of +10% (or better) or -10% (or worse), or (ii) stocks that are predominantly expected to have total returns that will range from +10% to -10%; both over the next 12 months.

UNDERWEIGHT: The industry, as defined by the analyst's coverage universe, has a high number of stocks that are expected to have total returns of -10% or worse over the next 12 months.

TRADING BUY: The industry, as defined by the analyst's coverage universe, has a high number of stocks that are expected to have total returns of +10% or better over the next 3 months.

TRADING SELL: The industry, as defined by the analyst's coverage universe, has a high number of stocks that are expected to have total returns of -10% or worse over the next 3 months.

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Corporate Governance Report of Thai Listed Companies (CGR). CG Rating by the Thai Institute of Directors Association (IOD) in 2012.

AAV – not available, **ADVANC** - Excellent, **AEONTS** – Good, **AMATA** - Very Good, **ANAN** – not available, **AOT** - Excellent, **AP** - Very Good, **BANPU** - Excellent , **BAY** - Excellent , **BBL** - Excellent, **BCH** – not available, **BCP** - Excellent, **BEC** - Very Good, **BGH** - not available, **BJC** – Very Good, **BH** - Very Good, **BIGC** - Very Good, **BTS** - Excellent, **CCET** - Good, **CENTEL** – Very Good, **CK** - Very Good, **CPALL** - Very Good, **CPF** - Very Good, **CPN** - Excellent, **DELTA** - Very Good, **DTAC** - Very Good, **EGCO** – Excellent, **ERW** – Excellent, **GLOBAL** - Good, **GLOW** - Very Good, **GRAMMY** – Excellent, **HANA** - Very Good, **HEMRAJ** - Excellent, **HMPRO** - Very Good, **INTUCH** – Very Good, **ITD** – Very Good, **IVL** - Very Good, **JAS** – Very Good, **KAMART** – not available, **KBANK** - Excellent, **KK** – Excellent, **KTB** - Excellent, **LH** - Very Good, **LPN** - Excellent, **MAJOR** - Good, **MAKRO** – Very Good, **MCOT** - Excellent, **MINT** - Very Good, **PS** - Excellent, **PSL** - Excellent, **PTT** - Excellent, **PTTGC** - Excellent, **PTTEP** - Excellent, **QH** - Excellent, **RATCH** - Excellent, **ROBINS** - Excellent, **RS** – Excellent, **SAMART** – Excellent, **SC** – Excellent, **SCB** - Excellent, **SCC** - Excellent, **SCCC** - Very Good, **SIRI** - Good, **SPALI** - Very Good, **SRICHA** – not available, **SSI** – not available, **STA** - Good, **STEC** - Very Good, **TCAP** - Very Good, **THAI** - Excellent, **THCOM** – Very Good, **TICON** – Very Good, **TISCO** - Excellent, **TMB** - Excellent, **TOP** - Excellent, **TRUE** - Very Good, **TTW** – Very Good, **TUF** - Very Good, **VGI** – not available, **WORK** – Good.