

PRINCIPAL PROTECTION SCORE

Rating Methodology

CONSTANT PROPORTION PORTFOLIO INSURANCE

In an effort to generate the optimum alpha, portfolio managers have utilized a myriad of investment strategies that have been developed and revised as per the changing needs of investors. Capital protected investment strategies have been around for long, which guarantee the protection of invested capital at the end of a pre-specified time period, by way of the structure of the fund. The need for a more aggressive strategy that could realize the potential upside offered by various risky asset classes while retaining a protection element of the former, resulted in the development of Constant Proportion Portfolio Insurance (CPPI) based investment strategy.

CPPI for fixed income instruments was first discussed by AF Perold in his study conducted for Harvard Business Review in 1986. Later on, studies conducted by Black and Jones (1987), Black and Rouhani (1989), and Black and Perold revisited the same strategy for equity instruments. Although first developed for retail investors, CPPI has been applied for pension funds and insurance companies.

The objective of this paper is to provide an understanding of this strategy and broadly, JCR-VIS' approach in assigning Principal Protection Score to funds utilizing this strategy.

UNDERSTANDING CPPI

CPPI is a capital protection based strategy that utilizes dynamic asset allocation to rebalance the portfolio in line with changing market conditions. The strategy entails active asset allocation between a risky asset class and a risk-free asset class. Under this methodology, exposure to risky asset increases when the risky asset generates positive returns. In a falling market scenario, the asset allocation becomes increasingly conservative. A basic understanding of a CPPI based fund is illustrated in Exhibit 1. The following terminologies are essential to understanding the structure of a CPPI based fund.

1. Multiplier: This number determines the aggressiveness of the CPPI based fund and reflects the investor's risk appetite.

2. Floor Value: Minimum value that the portfolio is allowed to reach in order to be able to payback all future due cash flows (including notional guarantee at maturity). Floor values can be fixed, or variable, and in most cases, will be arrived at, on the basis of future interest rate expectations.

3. Cushion Value (also referred to as Gap): Difference between Total Fund Value & Floor Value.

Exhibit 1:

- Assumptions
 - o Multiplier = 5
 - o Floor value fixed at Rs. 90
 - o Return on treasury bills = 10.0%.
- Suppose we have a CPPI fund with a life of 2 years and unit price of Rs. 100. As per CPPI, allocation to risky asset should be a product of multiplier and the cushion value as shown below:

$$\begin{aligned}\text{Investment in risky asset} &= \\ \text{Multiplier} \times \text{Cushion Value} & \\ \text{i.e. } 5 \times (100-90) &= \text{Rs. 50}\end{aligned}$$

So the fund will invest Rs. 50 in a risky asset class while the remaining Rs. 50 will be invested in a risk-free asset class.

- Now suppose the market value of the risky asset falls by 10%, resulting in a decline in fund value to Rs. 95 and resulting in a reduced cushion value of Rs. 5. Accordingly the exposure to risky asset will be reduced to Rs. 25 [i.e. $\{5 \times (95-90)\}$].
- The exposure to risky asset will be increased in case market value of risky asset rises.

strategies depends on future market value of the risky asset and their value at maturity. Let's suppose stock market as the risky asset class; in a souring equity market CPPI will be able to outperform the option protected strategy as CPPI based fund will progressively increase allocation to the stock market. However the same will underperform when the market is following a downward trajectory.

The main difference between a capital protected fund and CPPI based fund is the proportion that can be invested in risky assets. CPPI based funds may demonstrate a higher risk appetite at the beginning of the term which dissipates as the fund approaches maturity. The floor value and multiplier may be fixed at the inception of the fund while in some cases, fund manager may enjoy discretion in altering the same, over the life of the fund. Likewise, frequency of re-balancing the portfolio is also at the discretion of the fund manager; it could be quarterly, monthly or even daily. In addition to the downside risk associated with any asset class, the transaction costs may also impact the fund manager's decision regarding the same.

CPPI based funds are often compared to 'bond plus call option capital protected funds'. Difference in payoff of the two

PRINCIPAL PROTECTION SCORE – METHODOLOGY

The Principal Protection Score assigned to CPPI based funds is a measure of the fund's exposure to downside risk, with P1 depicting lowest exposure to downside risk on a scale of P1 to P10. JCR-VIS' Principal Protection Score measures the extent of erosion in principal that may be expected under realistic market scenarios.

As follows from the description above, the key factors affecting the risk profile of CPPI based funds are:

- Combination of Floor Value & Multiplier
- Volatility of the risky asset class

In addition to the above, the frequency of re-balancing the portfolio and management's accuracy in projecting interest rates will also determine the fund value that will be realized at maturity.

When rating such funds, JCR-VIS looks at the aggressiveness of the fund strategy by reviewing the suitability of the multiplier being used, given the current market conditions. This makes future expectations regarding market conditions an important element in the rating process. In addition, JCR-VIS also looks into the basis for determining the floor value. Ideally, floor value of the fund should be in line with the interest rate expectations over the life of the fund.

An essential input to determining the volatility of a CPPI based fund is the volatility in returns of the underlying risky asset. Given a very conservative combination of floor value and multiplier, investors can still be exposed to the risk of capital erosion if the market in which the risk based portion of the fund is invested, experiences a steep decline. This is illustrated in the historical simulation of portfolio values, under different market scenarios, attached as appendix to the methodology. In such cases, time interval for portfolio re-balancing can mitigate the downside risk given a conservative mix of floor value and multiplier; though its impact becomes less meaningful in a market experiencing free fall. On

the other hand, in a rising market, even the most aggressive combinations of floor value and multiplier will not adversely affect the fund's capital protection ability.

Gap risk is the most imminent threat as a sudden decrease in value of underlying risky assets may make it impossible for the fund manager to divest from the risky asset and generate enough cash flows to payback principal at maturity. Therefore JCR-VIS thoroughly reviews fundamentals of the companies, where substantial investments have been made to determine the expected volatility. Tools such as beta can measure the volatility, or systematic risk, of a security or a portfolio in comparison to the market as a whole. Furthermore, historical standard deviation of return, Value at Risk and Expected Shortfall may also be used, depending on the asset class. Moreover, liquidity risk becomes an added element in case of thinly traded assets, as it could affect the fund manager's ability to off-load its holdings.

External credit enhancement may bridge the gap risk, and is built into the rating assessment, where available.

JCR-VIS also looks into the risk emanating from the risk-free asset class i.e. the volatility of prevailing interest rates on T-Bills, by monitoring the duration of the overall risk-free portfolio in addition to reviewing the return structure on these T-Bills. Ideally shorter duration instruments with fixed returns are considered less volatile vis-à-vis longer duration instruments with variable return structure.

PRINCIPAL PROTECTION SCORE – RATING SCALE

Principal Protection Score		Exposure to Downside Risk
P1		LOWEST
P2		
P3		
P4		
P5		
P6		
P7		
P8		
P9		
P10		HIGHEST

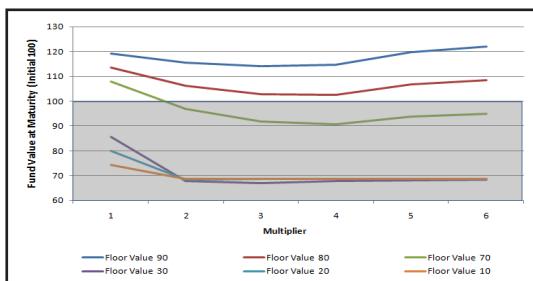
Expected erosion in capital increases
as we move down the scale

APPENDIX

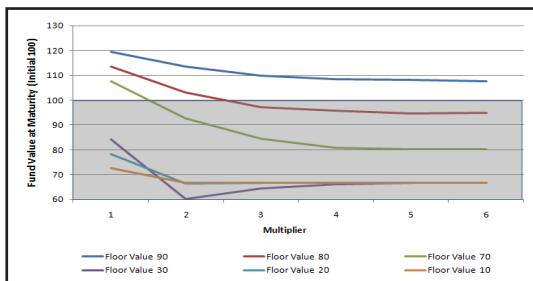
Investment Horizon: January 2008 - December 2009

KSE-100 index at inception:	13,666.43
KSE-100 index at period end:	9,386.92
1-year t-bill rate at inception:	9.24%
1-year t-bill rate at period end:	12.25%

Re-balancing Frequency: Daily



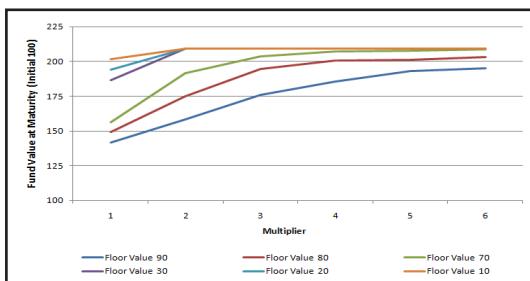
Re-balancing Frequency: Monthly



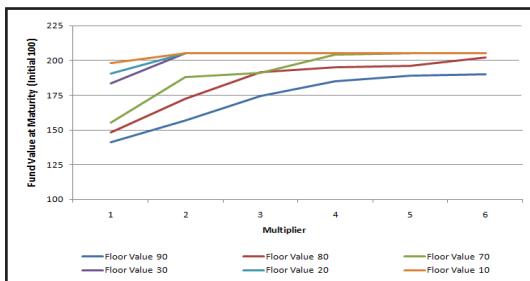
Investment Horizon: January 2009 - December 2010

KSE-100 index at inception:	5,865.01
KSE-100 index at period end:	12,022.46
1-year t-bill rate at inception:	11.63%
1-year t-bill rate at period end:	12.85%

Re-balancing Frequency: Daily



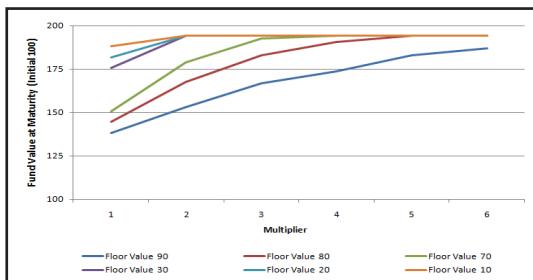
Re-balancing Frequency: Monthly



Investment Horizon: January 2008 - December 2009

Gold Prices (per gram) at inception:	2,075.00
Gold Prices (per gram) at period end:	3,070.00
1-year t-bill rate at inception:	9.24%
1-year t-bill rate at period end:	12.25%

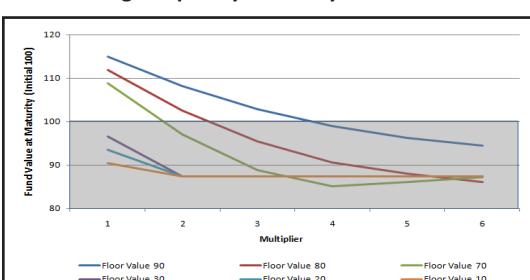
Re-balancing Frequency: Monthly



Investment Horizon: January 2012 - December 2013

Gold Prices (per gram) at inception:	4,720.00
Gold Prices (per gram) at period end:	4,124.35
1-year t-bill rate at inception:	11.80%
1-year t-bill rate at period end:	9.85%

Re-balancing Frequency: Monthly





Faheem Ahmad

*President & CEO, JCR-VIS Credit Rating Company Limited
Founder, VIS Group
Chairman, Association of Credit Rating Agencies in Asia*

Mr. Ahmad possesses 30+ years experience in financial risk assessment with focus on Islamic finance, venture capital and general management. He has top level management experience at international level in the fields of credit ratings, Islamic and conventional financial risk assessment modeling, industrial management and construction engineering. Mr. Ahmad is an active participant at international forums on Credit Ratings. He obtained his B.S in Civil Engineering from NED University of Engineering and Technology, Karachi. He also has Masters Degrees in Engineering and Business Administration from USA.



Sobia Maqbool, CFA - Group Head

Sobia has almost 10 years of professional experience in the field of credit ratings. As Group Head at JCR-VIS, she is in charge of a multi-jurisdiction team & supervising rating assignments across a diverse range of sectors, including corporate, sub-sovereigns & financial institutions. She also provides analytical support for international assignments conducted by Islamic International Rating Agency (IIRA) for sovereign ratings & Fiduciary ratings. Sobia is a Rating Committee member of both JCR-VIS & IIRA, which is a body that considers all rating actions.

Sobia has been actively involved in research activities & development of methodologies. She has developed analytical methodologies for various market segments such as Takaful, Public Finance, Non-banking Finance Companies, Mutual Funds, Bank Loan Ratings, among others. She also provided significant contribution to the development of Fiduciary Rating System, launched from the platform of IIRA. Sobia has spoken at both local & international forums & has been facilitating training courses in both Pakistan & abroad, in areas such as Corporate Credit Analysis, Bank Risk Analysis, Insurance Risk Analysis & Financial Management.



Mohammad Arsal Ayub - Assistant Manager

Arsal has been associated with JCR-VIS since mid-2013. During his tenure, he has worked on credit analysis of various industrial corporates, financial institutions and debt instruments. Arsal holds a Bachelors degree in Finance, Account & Management from the University of Nottingham.

Jahangir Kothari Parade (Lady Lloyd Pier)

Inspired by Her Excellency, The Honorable Lady Lloyd, this promenade pier and pavillion was constructed at a cost of 3 Lakhs and donated to the public of Karachi by Jahangir Kothari to whose genrosity and public spirit the gift is due. Foundation stone laid on January 5, 1920. Opened by Her Excellency, The Honorable Lady Lloyd on March 21, 1921.

Dome: A roof or vault, usually hemispherical in form.

Until the 19th century, domes were constructed of masonry, of wood, or of combinations of the two, frequently reinforced with iron chains around the base to counteract the outward thrust of the structure.

Origins: The dome seems to have developed as roofing for circular mud-brick huts in ancient Mesopotamia about 6000 years ago. In the 14th century B.C. the Mycenaean Greeks built tombs roofed with steep corbeled domes in the shape of pointed beehives (tholos tombs). Otherwise, the dome was not important in ancient Greek architecture. The Romans developed the masonry dome in its purest form, culminating in a temple built by the emperor Hadrian. Set on a massive circular drum the coffered dome forms a perfect hemisphere on the interior, with a large oculus (eye) in its center to admit light.



Jahangir Kothari Parade

National Excellence, International Reach

JCR-VIS Credit Rating

Company Limited is committed to the protection of investors and offers a blend of local expertise and international experience to serve

the domestic financial markets. With its international reach, JCR-VIS is positioned to aim for an international mark. In this regard, the global experience of our principal, Japan Credit Rating Agency, Ltd. has been invaluable towards adding depth to our ongoing research endeavors, enriching us in ways, that enable us to deliver our responsibilities to the satisfaction of all investors.

The edifice of the Jahangir Kothari Parade has stood proudly through the years and is a symbol of our heritage. Its 'Dome' as the most stable of building structures, exemplifies architectural perfection. Committed to excellence, JCR-VIS continues its endeavor to remain an emblem of trust.

JCR-VIS Credit Rating Company Limited

Technical Partners Islamic International Rating Agency, Bahrain

JV Partner CRISL, Bangladesh

Member Association of Credit Rating Agencies in Asia

KARACHI

VIS House - 128/C, Jami Commercial Street 14
D. H. A. Phase VII, Karachi - Pakistan

LAHORE

VIS House - 61-A/1, Street # 17
Calvary Ground, Lahore - Pakistan

Tel: (92-21) 5311861-70 Fax: (92-21) 5311872-73

E-mail: info@jcrvis.com.pk

Website: www.jcrvis.com.pk