

**2nd Conference on Corporate Governance in Emerging
Markets, São Paulo, July 2nd and 3rd, 2009.**

**COST OF CAPITAL ADJUSTED FOR GOVERNANCE
RISK THROUGH A MULTIPLICATIVE MODEL
OF EXPECTED RETURNS**

Rodolfo APREDA
Universidad del Cema
Buenos Aires, Argentina
ra@cema.edu.ar

Ezra Solomon (1955) gave a crystal clear definition of cost of capital and introduced a metrics to assess that notion.

Its function is to provide a correct and objective criterion by which management can determine whether it should or should not accept available proposals involving the expenditure of capital. Because of this function, this concept has also been called the “minimum required rate of earnings” or the “cut-off” rate for capital expenditure.

TO ASSESS COST OF CAPITAL IT WAS SUGGESTED A LINEAR APROXIMATION

$$k = x_D R_D + y_S R_S + z_{FH} R_{FH}$$

such that

$$x_D + y_S + z_{FH} = 1$$

where

$$x_D = D/(D+S+FH);$$

$$y_S = S/(D+S+FH);$$

$$z_{FH} = FH/(D+S+FH);$$

REMARK 1

THIS LINEAR APPROXIMATION CAN BE TRANSLATED AS BEING THE RETURN OF A PORTFOLIO OF DEBT, HYBRIDS AND CAPITAL SECURITIES ISSUED BY THE COMPANY UNDER THE PROPORTIONS STATED ABOVE.

FROM THIS POINT OF VIEW, THE INVESTOR REQUIRES SUCH MINIMAL RATE TO “BUY” AN INVESTMENT PROJECT OR THE COMPANY ITSELF. OTHERWISE, HE SHOULD PREFER TO SET UP A PORTFOLIO WITH THE COMPANY’S SECURITIES

REMARK 2

WHENEVER WE DISCOUNT ANY CASH FLOW,
WE USUALLY RESORT TO
THE FOLLOWING FORMAT:

$$\frac{CF(j)}{\langle 1 + x \rangle^j}$$

(IT IS WORTH OF BEING NOTICED THAT
WE WRITE $\langle 1 + X \rangle$, THAT IS TO SAY
A STARTING MONETARY UNIT PLUS THE
YIELD OF THAT UNITARY UNIT)

**ANY TIME WE NEED TO KNOW WHAT IS
INSIDE THIS EXPRESSION, FOR INSTANCE
WHEN WE ASK OURSELVES ABOUT THE
COMPONENTS OR “FACTORS” WITHIN IT,
WE USE A MULTIPLICATIVE MODEL.**

**IN OTHER WORDS, EACH FACTOR BECOMES
AN EXPRESSION OF THE SORT**

< 1 + RATE >

THE MULTIPLICATIVE MODEL OF COST OF CAPITAL

$$1 + K =$$

$$= \langle 1 + x_D R_D \rangle \cdot \langle 1 + y_S R_S \rangle \cdot \langle 1 + z_{FH} R_{FH} \rangle$$

WHEN WE USE THE LINEAR APPROXIMATION,
 WHAT IS KEPT OUT OF OUR ASSESSMENT
 IT BECOMES, FOR DEVELOPING
 COUNTRIES, NOT INCONSEQUENTIAL

$$\begin{aligned}
 K = k + & \frac{x_D y_S R_D R_S + x_D z_{FH} R_D R_{FH} +}{+ y_S z_{FH} R_S R_{FH} + x_D y_S z_{FH} R_D R_S R_{FH}}
 \end{aligned}$$

MEASURING THE GAP

$$K - k =$$

$$x_D y_S R_D R_S + x_D z_{FH} R_D R_{FH} +$$

$$+ y_S z_{FH} R_S R_{FH} + x_D y_S z_{FH} R_D R_S R_{FH}$$

GOVERNANCE

RISK

Aprada (2007) introduced a new governance index, weighted averaged in terms of governance variables.

At date t , and for the company c , the value of the governance index comes down to

$$\begin{aligned} G(c; t) &= \\ &= w(1). G(c, 1, t) + w(2). G(c, 2, t) + \\ &\quad + \dots + w(Q). G(c, Q, t) \end{aligned}$$

REMARK 1

$G(c, j, t)$: the value of the governance variable j , at date t , for the company c .

$w(j)$: the value of the weight linked to the j -variable of governance, at date t , for the company c .

$$w(1) + w(2) + \dots + w(Q) = 1$$

$$j : 1, 2, \dots, Q$$

REMARK 2

GOVERNANCE VARIABLES

- RELATED TO OWNERS (6 VARIABLES)
- TO THE BOARD OF DIRECTORS (8 VAR.)
- TO THE SENIOR MANAGEMENT (7 VAR.)
 - TO CREDITORS (5 VAR.)
- ON GOVERNANCE ARCHITECTURE (7 VAR.)
- ABOUT GATEKEEPERS Y REGULATORS (6 VAR.)

**This index rate of change measures up whether
the governance has improved or not
through the horizon $H = [t; T]$**

$$1 + r_c(\text{governance}) = G(c; T) / G(c; t)$$

**The index attempts to measure
governance performance**

From the index rate of change we work out
the rate of governance risk

$\Delta \text{govrisk}$

by solving

$$\langle 1 + r_c (\text{governance}) \rangle \cdot \langle 1 - \Delta \text{govrisk} \rangle = 1$$

ASSESSING GOVERNANCE RISK

SCENARIO 1

$$\Delta \text{ govrisk} = r c (\text{governance}) / < 1 + r c (\text{governance}) >$$

IF GOVERNANCE PERFORMANCE IMPROVES

$$\Rightarrow r c (\text{governance}) > 0 \text{ and } \Delta \text{ govrisk} > 0$$

hence

$$1 - \Delta \text{ govrisk} < 1$$

ASSESSING GOVERNANCE RISK

SCENARIO 2

$$\Delta \text{ govrisk} = r c (\text{governance}) / < 1 + r c (\text{governance}) >$$

IF GOVERNANCE PERFORMANCE WORSENS

$$\Rightarrow r c (\text{governance}) < 0 \quad \text{and} \quad \Delta \text{ govrisk} < 0$$

hence

$$1 - \Delta \text{ govrisk} > 1$$

**COST OF CAPITAL ADJUSTED FOR
GOVERNANCE RISK
LINEAR APPROXIMATION**

$$k_{+ \text{ gov}} = x_D R_D + y_S R_S + z_{FH} R_{FH} - \Delta \text{ govrisk}$$

a) If $\Delta \text{ govrisk} > 0$, then cost of capital lessens.

a) If $\Delta \text{ govrisk} < 0$, then cost of capitale rises.

COST OF CAPITAL ADJUSTED FOR GOVERNANCE RISK MULTIPLICATIVE MODEL

$$1 + K_{+gov} = < 1 + x_D R_D > \cdot < 1 + y_S R_S > \cdot < 1 + z_{FH} R_{FH} > \cdot < 1 - \Delta \text{govrisk} >$$

a) If $\Delta \text{govrisk} > 0$, then

$$1 - \Delta \text{govrisk} < 1$$

and cost of capital lessens.

a) If $\Delta \text{govrisk} < 0$, then

$$1 - \Delta \text{govrisk} > 1$$

and cost of capital increases.

CONCLUSIONS

1.- GOVERNANCE RISK CAN BE ASSESSED ON SAFE GROUNDS.

2.- THE PAPER ALSO SHOWS HOW GOVERNANCE RISK CAN BE EMBEDDED INTO THE STRUCTURE OF COST OF CAPITAL, EITHER IN THE LINEAR APPROXIMATION OR IN THE MULTIPLICATIVE MODEL.

CREDITS AND REFERENCES

- Apreda, R. (2008) *Cost of Capital Adjusted for Governance Risk through a Multiplicative Model of Expected Returns*. University of Cema, Working Paper Series, number 383.
(downloadable from www.ssrn.org and www.cema.edu.ar/publicaciones/documentos)
- Apreda, R. (2007a) *Factoring Governance Risk into Investors' Expected Rates of Return by means of a Weighted Average Governance Index*. University of Cema, Working Paper Series, number 356.
(downloadable from www.ssrn.org and www.cema.edu.ar/publicaciones/documentos)
- Apreda, R. (2007b) *Corporate Governance*. Editorial La Ley, Buenos Aires (in Spanish).
- Apreda, R. (2005a) *Mercado de Capitales, Administración de Portafolios y Corporate Governance*. Editorial La Ley, Buenos Aires (in Spanish).
- Apreda, R. (2005b) *The Semantics of Governance*. Corporate Ownership and Control, volume 3, number 2, pp. 45-53.
(downloadable from the author's web page: www.cema.edu.ar/u/ra)
- Apreda, R. (2003) *The Semantics of Governance*. Working Paper Series, University of Cema, number 245, Buenos Aires.
(downloadable from www.cema.edu.ar/publicaciones and www.ssrn.org)
- Gompers, P.; Ishii, J.; Metrick, A. (2001) *Corporate Governance and Equity Prices*. National Bureau of Economic Research, working paper series, number 8449.
(downloadable from www.nber.org)
- Solomon, E. (1955) Measuring a Company's Cost of Capital. The Journal of Business, volume 48, number 4, pp. 240-252. (downloadable from www.ssrn.org)
- Yacuzzi, E. (2008) *A Governance Indicator for Small and Medium-Sized Enterprises*. Working Paper Series, University of Cema, number 390, Buenos Aires.
(downloadable from www.ssrn.org and www.cema.edu.ar/publicaciones/documentos)